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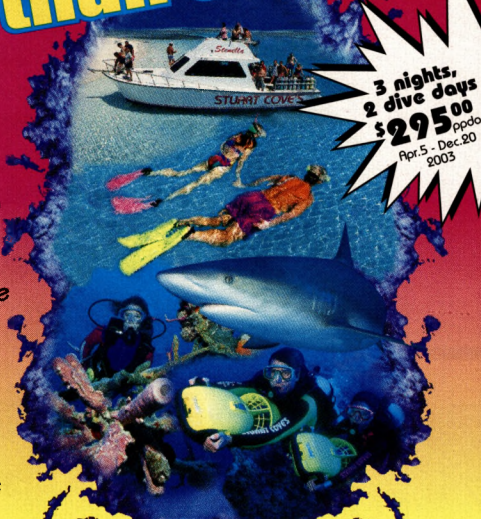


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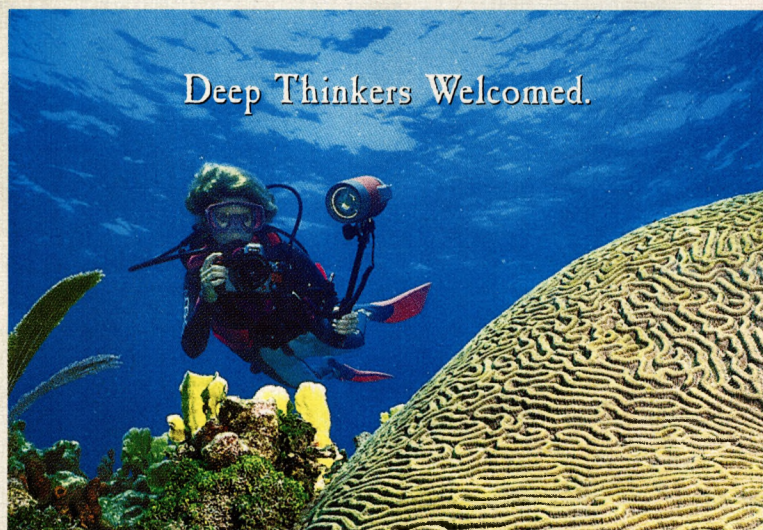
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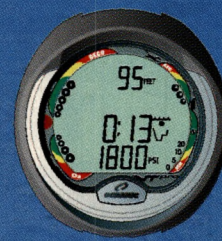
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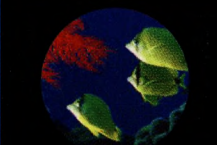
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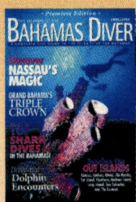
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50 Gear Guide Gearheads, get ready to drool over 16 full-color pages of the latest and greatest in dive gear. All of the 2003 ScubaLab Testers' Choices are here, from the best high-performance regs to high-stretch wetsuits that are literally your second skin. We've even got the best dive bags to carry it all in. Consider this your Christmas wish list, and, uh, wipe your chin. *By John Brumm*

- > 52 Regulators > 58 Fins > 63 Lights
- > 54 BCs > 60 Masks > 64 Booties
- > 56 Computers > 62 Wetsuits > 65 Bags

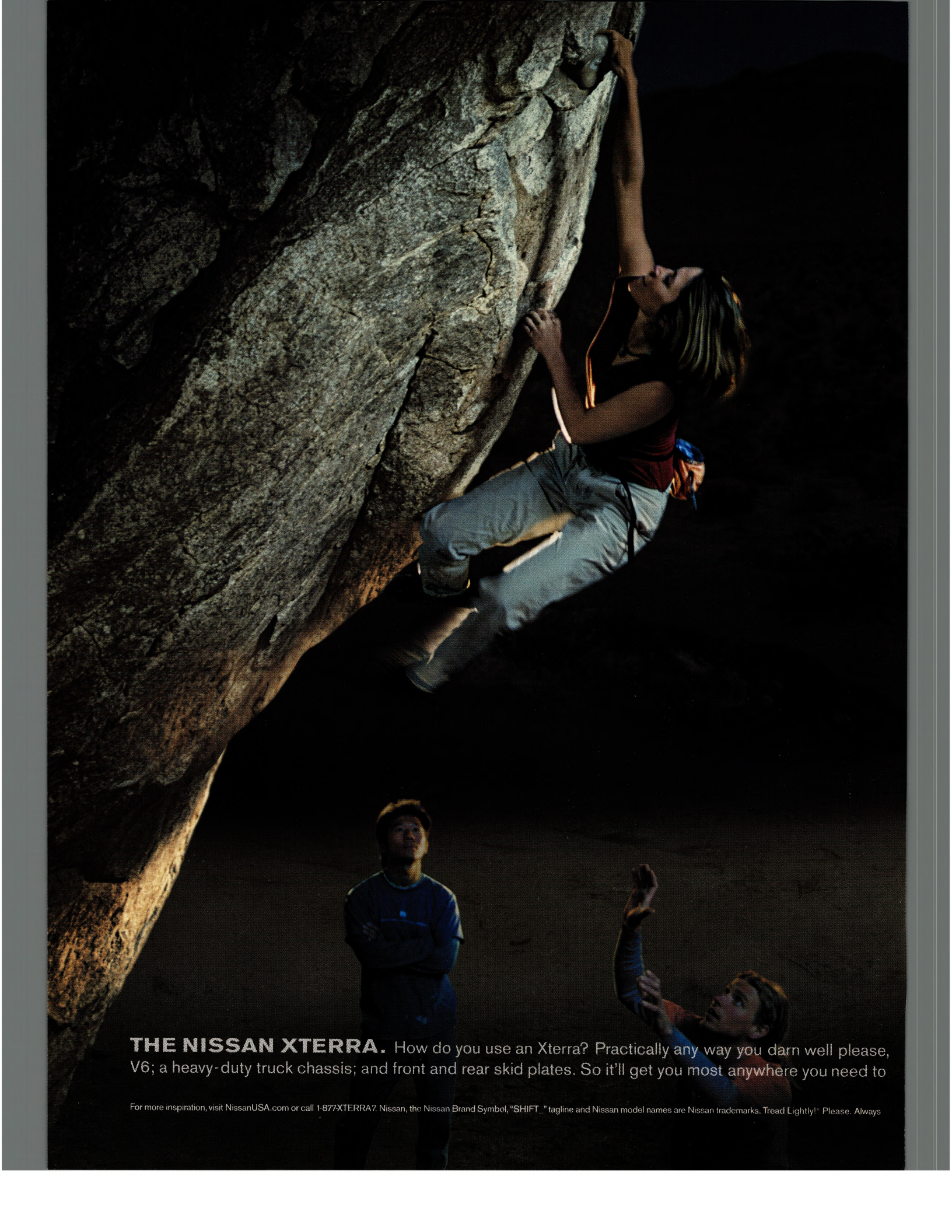
DIVE LOG

66 Tobago Bring your camera and a spirit of adventure to the Caribbean island that time forgot. With thrill-ride currents, one of the world's largest brain corals and stunning topside scenery, Tobago appeals to all the senses. *By Ethan Gordon*

LESSONS FOR LIFE

72 Broken Rules, Bent Diver Disaster strikes two trimix divers who decide to follow their own rules instead of the tried-and-true protocols that keep technical divers safe. *By Michael Ange*





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19 THREE MORE SITES you have to dive before you die: The Crack in Glover's Reef, Belize, the *Shoun Maru* in the Northern Mariana Islands and Izu Oceanic Park in Japan.

CURRENTS

24 PREDATORS IN PERIL Commercial fishing has turned top predators like tuna, marlin and sharks into hunted prey. See why their numbers are dwindling. **PLUS:** Walking in Bimini's mangroves, a new reef-friendly sunscreen, and Bubbles, the flying manta ray.

TRAINING

79 ONE MINUTE TO SAFER DIVING Can a deep safety stop at half your maximum depth cut the risk of DCS? See why training agencies and computer makers think so, and how it may change the way we all dive.

89 WHAT'S IN YOUR TANK? Follow your nose to see if the air in your cylinder is as ready to dive as you are.

91 STRONGER LEGS FOR BETTER FINNING Everyday life doesn't condition your leg muscles for the demands of diving, but our easy exercise plan does. Follow our advice and you'll be finning like a fish in no time.

93 STROBE USE IN THE DIGITAL ERA Why your old TTL strobes don't play nice with your new digital camera—and the solutions manufacturers have designed to fix the problem.

36

New Providence's *Captain Fox* is part of a huge armada of shipwrecks in the Bahamas.



36 THE BAHAMAS Pick your adventure, and we'll show you where to find it in this archipelago of 700 islands.

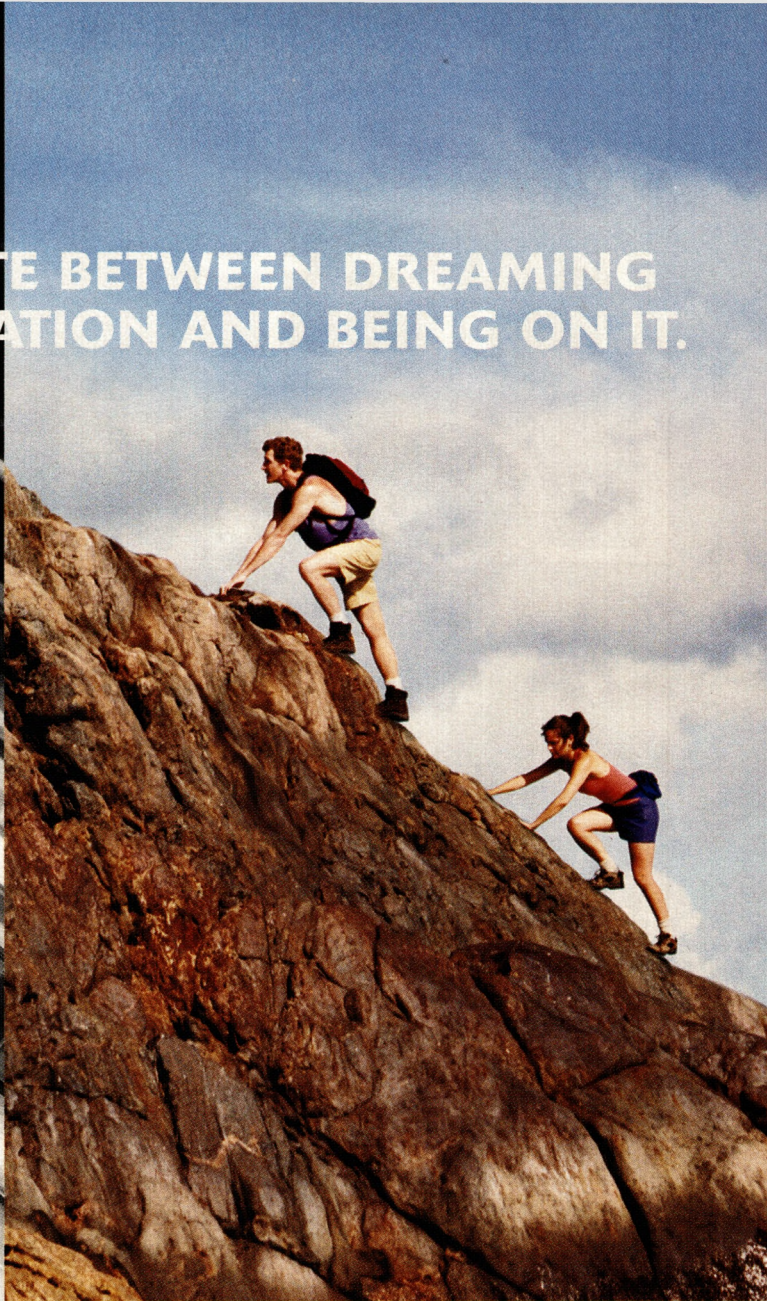
42 READER RATINGS The straight scoop on the operators and resorts of Roatan in Honduras's Bay Islands.

46 DIVE DEALS Twelve travel bargains to places where sleet and snow are abstract concepts.

15 TALK 96 SNAP 107 IN DEPTH 112 LOOK



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(EDITOR'S NOTE)

The More Things Change ...

... the more authoritative gear reviews we publish. BY BUCK BUTLER

THIS WAS A YEAR of great change at *Scuba Diving*. With our June issue, we debuted a redesign that altered the whole look of the magazine. We added features and departments. We changed the way we use photography. We even got a new logo.

But there's one thing that hasn't changed. Turn to our cover and look at the tag line just under our spiffy new logo. It's been there all along: "The Magazine Divers Trust." To those of us who work here, that's not just a slogan. It's our guiding philosophy and a responsibility we take seriously.



A fin tester splashes down in Cozumel.

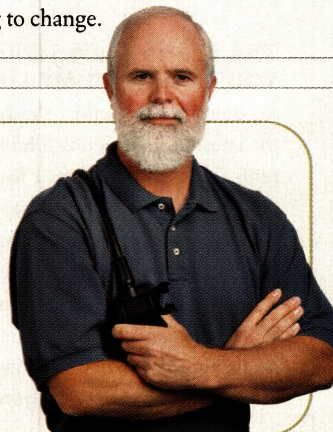
One of the primary ways we've earned our readers' trust over the past 11 years has been with our exclusive ScubaLab reviews of dive equipment—the only scientific, objective testing of scuba gear conducted specifically for recreational divers. And in this issue, we present our annual Gear Guide, featuring the best of the best: the Testers' Choice models from every equipment review of 2003.

Our testers spent the year measuring BC valve flow rates in California, timing speed runs for fin tests in Cozumel and collecting breathing-simulator data on regulators in Florida. Why? Because we want to arm you with gear reviews you can trust, so you can choose the equipment that will make you a safer, more comfortable diver. And that's not going to change.

(CONTRIBUTOR)

JOHN BRUMM, ScubaLab Director

In 2003, ScubaLab Director John Brumm supervised the testing of more than 200 new gear items from BCs to fins to regulators. "I'm tempted to say 'It's a tough job,' but the truth is, I love this stuff," he says. "Keep those new toys coming."



(ONLINE)

Do Your Homework with GearFinder

If this issue's Gear Guide doesn't answer all your questions about scuba equipment, check out *ScubaDiving.com's* **GearFinder**. Here, you'll find every gear review we've published in the last four years. The reviews are sorted by issue date, and you can search for gear by manufacturer. **GearFinder** also serves up the most recent message board posts about the type of equipment you're looking for. Go to www.scubadiving.com and click on "GearFinder."

(NEXT)

Sneak Peek

In 2004, ScubaLab is going to be busy. They'll be reviewing the latest in alternate air sources and taking a look at the most recent developments in ditch systems on the newest weight-integrated BCs. Exposure suits will be on the agenda as well, from tropical suits to some truly revolutionary advancements in dry suit technology. Of course they'll be checking out the latest in scuba fins and regs too, and expect to see some exciting new entries in dive computers. Plus new masks, bags and much more. Stay tuned. It only gets better.

(LETTERS)

Osa So Good

THANKS FOR Paul Kvinta's article on the Osa Peninsula ("Untamed Costa Rica," Nov. '03). I, too, had the great good fortune of diving there back when you had to catch a small boat down the Sierpe River and crash through the Pacific breakers to get to Drake Bay—getting there was half the fun!

Like Mr. Kvinta, I'm concerned about development, but let's think about the Costa Ricans who probably want electricity, cell phone service and a few more tourists. Osa can sustain additional eco-lodges without killing the wilderness that makes it so attractive in the first place. After all, someone encroached upon nature to build the lodge where your writer slept, didn't they? The fact that we don't always like change doesn't make it catastrophic. Finally, let's not forget that a few more divers and hikers will create an even bigger economic incentive to protect the environ-

ment. **Adam Greenbriar,**
Atlanta, Ga.

The Scuba Diving Diet Plan
YOU'VE RUINED MY LUNCH! I sat down with a turkey sandwich and the latest issue of *Scuba Diving* ("Currents," Nov. '03), when I found your article (complete with grotesque cut-away photo) about the "hermaphroditic parasite" isopod that attaches itself to a fish's tongue and then consumes it. Not only did I throw my sandwich away, I think I'm going to have nightmares. **Steven Adler,** Eugene, Ore.



(HOW TO REACH US)

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FAX: (912) 351-0735

MAIL: Editor, Rodale's Scuba Diving, 6600 Abercorn St., Suite 208, Savannah, GA 31405

(TOP TEN)

TOP TEN THINGS YOU DON'T WANT TO HEAR WHEN YOU SURFACE FROM A DIVE:

#10

"Was your nose bleeding like that when you went under?"

#9: "I thought you had the camera."

#8

"Sorry, honey, I guess I must have forgot to put that rubber ring back on your video camera housing."

#7

"Don't move. If it thinks you're dead, it'll go away."

#6

"Oops, I think I was off with my compass heading."

#5: "Welcome to Cuba."

#4

"Crikey, aren't you a little beauty! Help me get a tag on her, Terri."

#3

"Hey, where's that fancy camera of yours?"

#2

"You've got guts. We all got out when the great white showed up."

#1: "You didn't happen to see the outboard while you were down there, did you?"

(From the users of www.scubadiving.com. For more Top 10 lists, go to www.scubadiving.com and click on "Community.")

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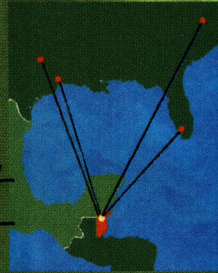


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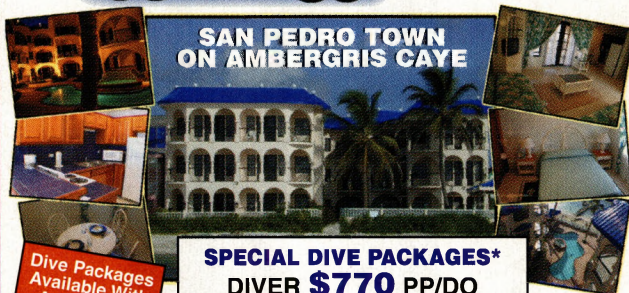
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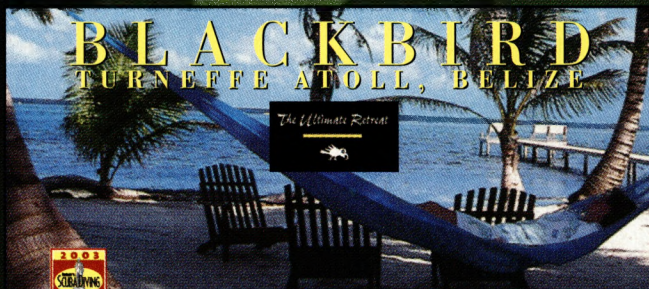


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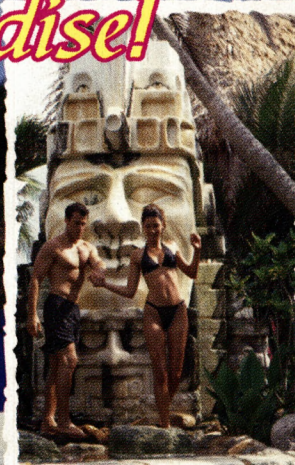
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Dive THE GREAT S



Grand canyon: The Crack lies off Glover's Reef, the least dived of Belize's three atolls.

(BELIZE)

The Crack

AMONG THE MANY surprises along the wall between Long and Northeast cays on the southeast corner of Glover's Reef is the Crack, a deep fissure draped with eye candy—thick colonies of gorgonians, Dr. Seuss-shaped sponges and tentacled hydroids. Blacktip reef and nurse sharks, grouper, batfish and barracuda cruise the area; loggerhead and hawksbill turtles and lobster are frequent visitors. Forty miles off Belize, Glover's Reef is an oval-shaped atoll with more than 50 miles of largely unexplored fringing reef and drop-offs plunging thousands of feet to the ocean floor. The large inner lagoon contains more than 700 patch reefs and is loaded with schools of fish like silversides and jacks.



(ROTA)

Shoun Maru

AFTER UNLOADING its ordnance on the Northern Marianas island of Rota, this 393-foot-long Japanese freighter was slammed by an American aerial torpedo on June 23, 1944. Within minutes, *Shoun Maru* sank beneath the waters of Sasanhaya Bay, settling on the sandy bottom at 115 feet. Today, the ship rests upright, with its impressive bow rising to 80 feet. The *Shoun Maru* is not intact, however—the hull was blown open during a botched salvage operation in the '60s.



The coral-encrusted *Shoun Maru* is home to thousands of fusiliers, crinoids, garden eels and batfish.

(J A P A N)

Izu Oceanic Park

SOME 5,000 YEARS AGO, volcanic eruptions from the Izu Oshima volcano formed the rocky substrate of the Izu Oceanic Park off Japan's southeast coast, an hour south of Tokyo. Depths here vary from 25 to 100 feet, and a southern exposure protects the bay from strong winds, leaving the water calm and clear. The shallow rocky reef shelters juvenile lionfish and quarter-inch cowries, while at greater depths a sandy bottom is home to mature lionfish, halibut and scalefin anthias. A close look may reveal a dragon moray peering from its hole or a pinecone fish darting among brilliant teal-colored seaweed. **SD**

GET THERE ➤ For more information on these great dives, turn to In Depth, page 107, section 1.

The Kuroshio Current feeds exceptionally large soft corals, like this *Alcyonacea*, which thrive in the popular Izu Oceanic Park.

Attention Divers!



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Curre



Commercial fishing has put the bite on top predators from great white sharks to tuna and marlin. Researchers estimate that big fish have declined 90 percent in five decades.



notes



(PROTECTION)

Predators in Peril

Big fish are in decline.

Beneath the sea, the hunters have become the overhunted.

A startling new study published in the journal *Nature* estimates that in the last five decades, commercial fishing has wiped out 90 percent of the world's large predatory fishes including tuna, swordfish, marlin, scalloped hammerheads, thresher sharks and great whites. Left unchecked, the study claims, industrial fisheries can decimate predators in a newly targeted area in as little as 10 to 15 years. Sharks are especially hard-hit by excessive fishing because they reproduce too slowly to keep populations from plummeting.

"Since 1950, with the onset of industrialized fisheries, we have rapidly reduced the resource base to less than 10 percent, not just in some areas, not just for some stocks, but for entire communities of these large fish species from the tropics to the poles," says fisheries biologist Ransom Myers, lead author of the 10-year study.

Restoring the ocean's big fish is critical to the health of marine ecosystems that depend on a balance between predator and prey species, says Myers. Doing so would require at least a 50 percent reduction in the take of large predators and restrictions on longline fishing techniques that use miles of baited hooks to indiscriminately catch a wide range of species.

"We have to understand how close to extinction some of these populations really are. And we must act now, before they have reached the point of no return," says Myers. "I want there to be hammerhead sharks and bluefin tuna around when my five-year-old son grows up. If the present fishing levels persist, these great fish will go the way of the dinosaurs." —LANCE LEONHARDT

PHOTOGRAPH BY BRANDON COLE

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(TOPSIDE)

FOLLOW THE MAZE

Where reef life begins.

The Bahamian island of Bimini sits on the edge of the continental shelf, front-and-center on the deep waters of the Gulf Stream. Divers and fishermen flock to the island for encounters with everything from gobies to marlin, but few ever explore the source of all that biodiversity—the mangroves of the North Sound.

The maze of waist-deep channels serves as a nursery for marine life from spiny lobsters, seahorses and eagle rays to the billfish that grow to haunt the dreams of fishermen. At sites like Eastwell's Channel or Bonefish Hole, you can snorkel with the tidal current past tangled roots encrusted with sponges and swarmed by schools of snapper. Wear sandals or a good pair of dive boots so you can stroll the channels, watching the tide swirl past the reflections of waxy green leaves. Or stand absolutely still, and you might see a juvenile lemon shark swim by your feet. —TIM CALVER



Watch your step: Bimini's mangrove channels are a haven for juvenile fish.

(SKIN)

No More Ring Around the Reef

Slather millions of bodies with sunscreen lotion, dip them in the sea, and you have the equivalent of an oil tanker a year sinking in your tropical vacation paradise. To prevent ring around the reef, only biodegradable sunscreen is allowed at popular water parks on Mexico's Yucatan Peninsula.

Visitors are issued tubes of environmentally safe lotion as they enter Xel-Ha, Xcaret, Garrafon and Via Delphi for a day of snorkeling and swimming. Signs banning conventional lotions dot the parks.

Most sunscreens take weeks to break down

and inhibit the filtering of sunlight to the reef.

The eco-friendly lotion from Caribbean Pacific Natural Products, of Orlando, Fla., biodegrades in five days or less, say park officials.

The company says its sunscreens—available in SPF 15 and 25—contain only natural, organic ingredients. Among them: squalane (a derivative of Mediterranean olive), Chilean rose hip oil, walnut oil, green coffee and extracts from wild pansy, passion fruit, camellia, sunflower, kukui and macadamia. —BOB STERNER

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CURRENTS

(QUOTE)

**We don't know what we'll
find. We don't even know
what we're looking for.**

—RONALD O'DOR, COORDINATOR OF THE CENSUS OF MARINE LIFE, ON THE
10-YEAR, \$1-BILLION PROJECT TO IDENTIFY UNDISCOVERED SPECIES.

(PROTECTION)

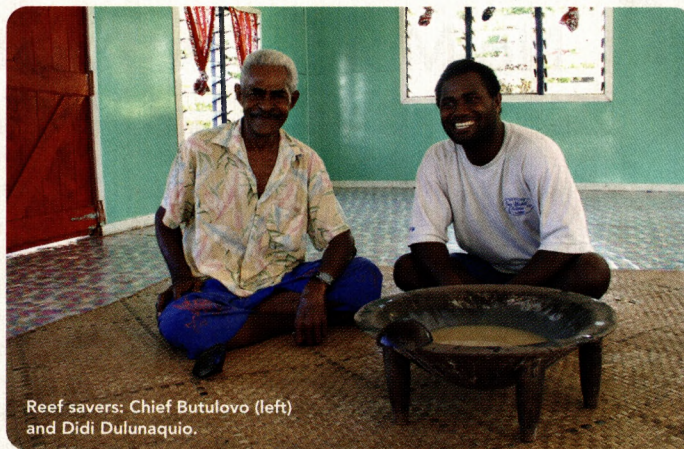
SAVING FIJI'S FUTURE

A grassroots effort to protect the reef.

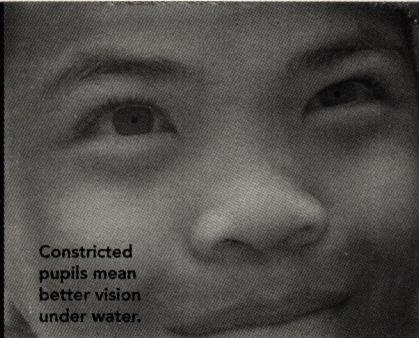
If Fiji is the soft coral capital of the world, the island of Namena is one of its must-see monuments. But divers aren't the only ones attracted to its fishy reefs. One recent day, a small commercial fishing boat floated nearby—but not for long. Divemaster Sirilo "Didi" Dulunaquio went over to chat and returned with a smile. "They won't be back. I told them there is no fishing here, and their boat could be confiscated."

Thanks to Didi, a divemaster at the Jean-Michel Cousteau Resort, the reefs of Namena are Fiji's newest marine protected area. With the help of the Coral Reef Alliance (CORAL), Didi visited Bonaire for a crash course in marine park management. "I saw how we could use their ideas—like user fees and souvenir tags—in Fiji," he says.

When he returned home, Didi convinced 10 surrounding villages to set aside 25 square nautical miles of reef. Divers pay a small annual fee to dive, and the proceeds fund scholarships for village children. "Everyone here is now happy about the protected area," says Semi Butulovo, chief of the Navatu village. "It saves for the future." —PAMELA S. TURNER



Reef savers: Chief Butulovo (left)
and Didi Dulunaquio.



Constricted pupils mean better vision under water.

(SCIENCE)

Sea Children See More

Improve your underwater vision without a mask.

Imagine you're at 90 feet when your mask strap pops off. Think you'd be able to read your pressure gauge? Probably not. But a recent study suggests that if you had spent your childhood diving for sea cucumbers, you might have a better chance.

Research shows that the children of a tribe of sea nomads in Southeast Asia known as the Moken see twice as well under water without masks or goggles as European children do. The Moken live on boats, fishing the waters of the Mergui Archipelago off Myanmar. The children pitch in by diving for shellfish and sea cucumbers, and spend so much time under water without masks that their brains become adept at correcting water-blurred vision by changing the shape of their lenses and constricting their pupils.

"You can't rule out genetics, but preliminary data suggests that it's learned," says lead researcher Anna Gislén of Sweden's Lund University. "The data says that it's possible that your children could learn to do this as well."

For landlubbers over the age of 40, it's probably too late to learn the process, "but a 25-year-old could improve his vision with practice. You can actually train more of your visual system than you think," says Gislén.

ANNA GISLÉN

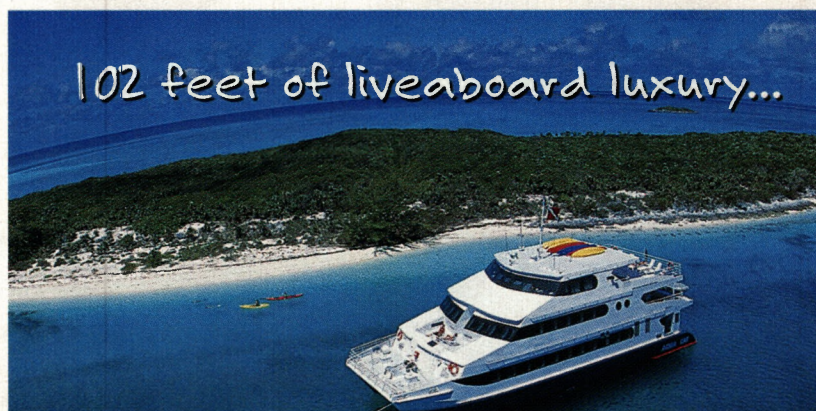


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CURRENTS

(IMAGE)

Air Bubbles

Bubbles, the 700-pound manta ray that was the star attraction of the aquarium at the Atlantis Resort on Paradise Island, Bahamas, flies home to the Atlantic Ocean after two years of entertaining guests. The manta with the 12-foot wingspan had outgrown her viewing enclosure, so the resort staff decided to release her back to the wild.

Bubbles only flies first-class.



(VOLUNTEER)

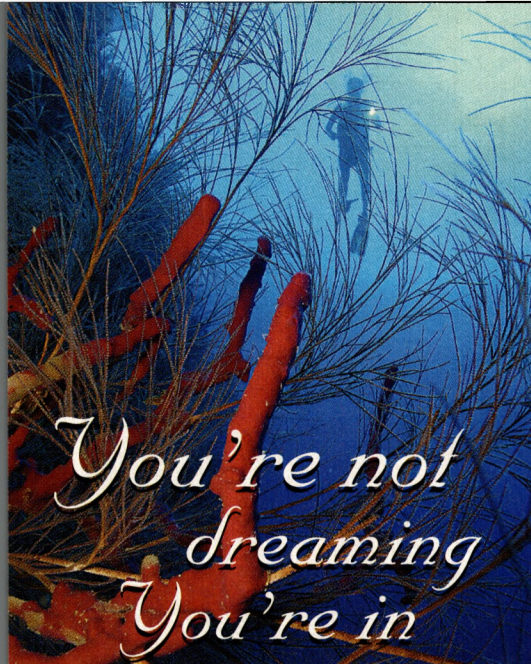
By the Numbers

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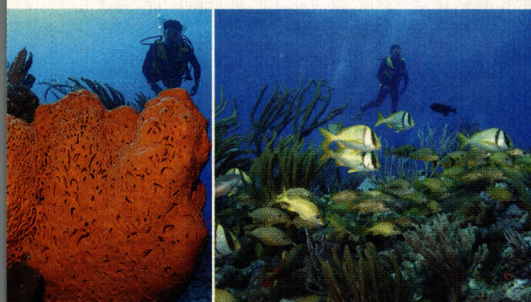
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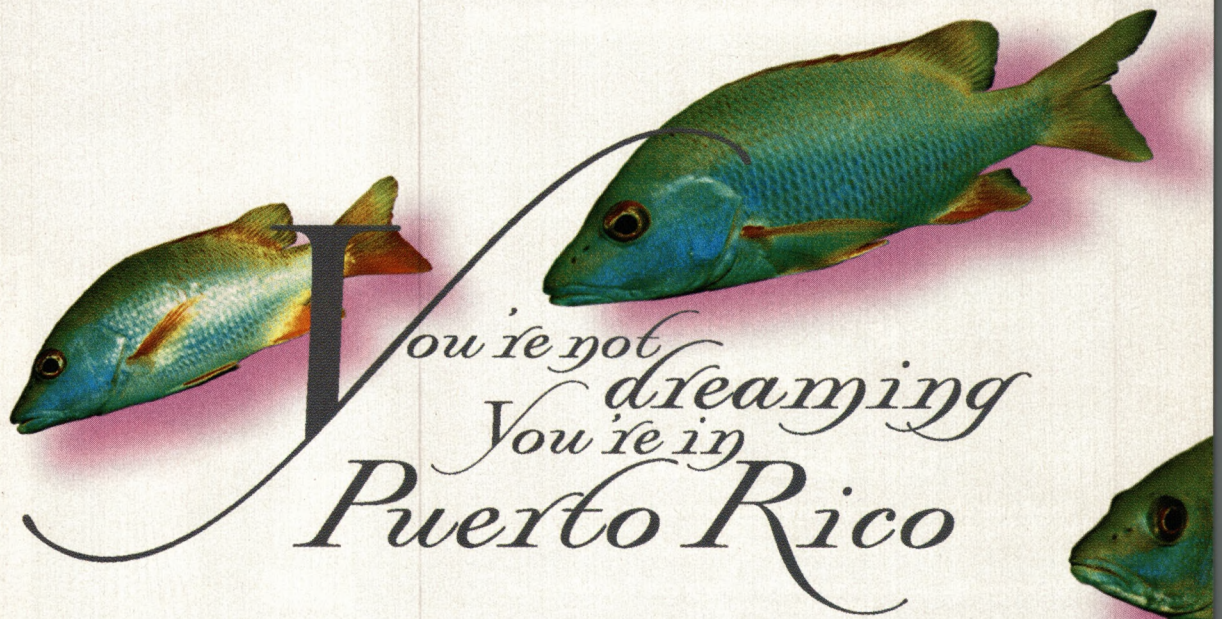


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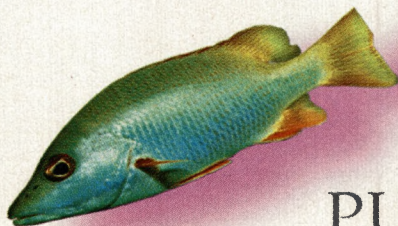


MAZE OF ANCIENT CAVERNS, ALLEYWAYS, AND TUNNELS. SPY ON AN OCTOPUS.

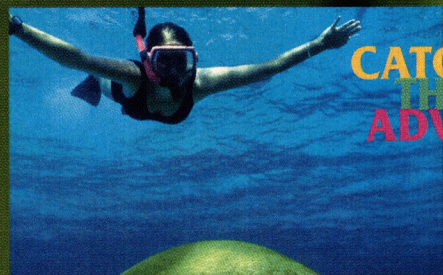
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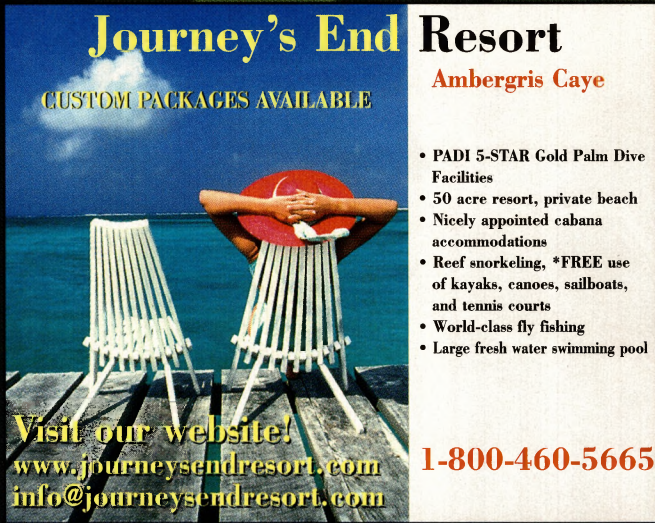
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L I F E

(FISH ID)

WHAT'S THIS?

At a maximum size of about six inches, this relatively small member of the prickleback family likes to hide in plain sight. Though shy around divers—it retreats in a flash if approached too quickly—it can be found curling up in open reef crevices while its larger cousins peer out at the world from inside sponges. You'll find it on shallow Pacific reefs from the Aleutian islands to Southern California's San Miguel Island, usually at a depth of about 40 feet. For clues to its identity, consider the dozen or so eyespots on the dorsal tail and the Mohawk of cirri on its head.

t h e A N S W E RMosshead warbonnet, *Chirolophis nugator*.

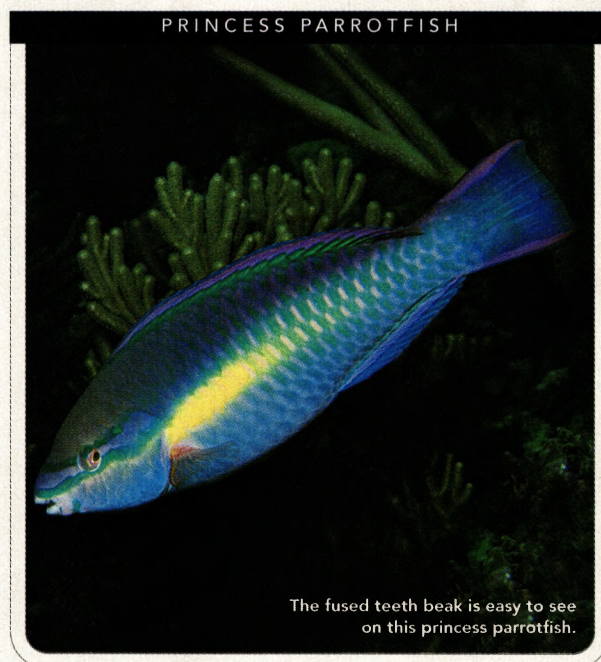
the DIFFERENCE

How can you tell two families of colorful transsexuals apart? Look at their teeth.

Most fish swim primarily by using tail strokes. The other fins, including the pectorals—the pair of fins just behind the head of most fish—are used to change direction and provide stability. Wrasses and parrotfish, however, use the pectoral fins as their primary means of swimming.

Members of both families are constantly on the move,

pausing for only short periods of time when feeding. Wrasses and parrotfish are generally colorful, beautifully marked and have large, noticeable scales. Additionally, the life cycles of both include three phases in which they are marked and colored differently as they mature: the juvenile phase, the initial phase and the terminal phase. The initial phase includes sexually mature females and, in some species, immature and mature males. The terminal phase is the most colorful and is made up



PRINCESS PARROTFISH

The fused teeth beak is easy to see on this princess parrotfish.

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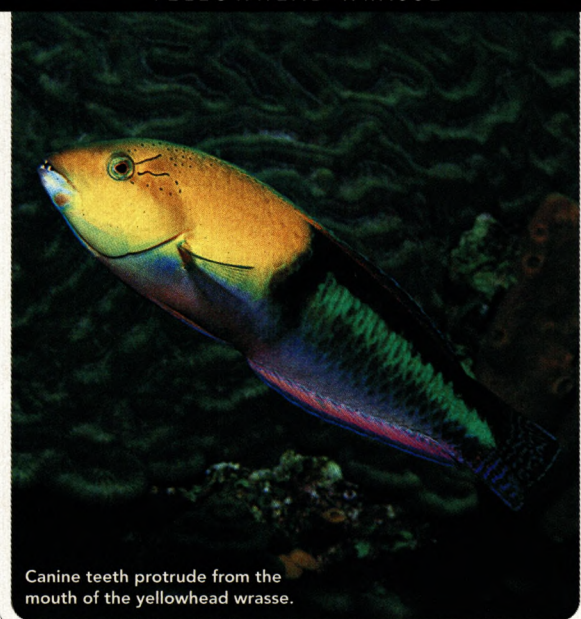
exclusively of sexually mature males. Some are hermaphroditic and go through a sex reversal to become terminal-phase males, while others simply mature, never changing their sex.

Parrotfish are usually large with stout bodies, while wrasses tend to be smaller and have more elongated, cigar-shaped bodies. Although these differences can provide a clue to family identification, there are enough exceptions to these generalizations that they cannot be used alone. However, close attention to the mouth can give the fish-watcher a foolproof method of telling the two apart.

Like most fish, wrasses have a large number of individual

teeth, and the canines, long pointed teeth at the front of the mouth, often visibly protrude from behind the lips. These teeth are used to penetrate the shells of the invertebrates they feed on, including crabs and urchins. The teeth of parrotfish, on the other hand, have fused together forming stout beaks—the source of the family name. They use these powerful beaks to scrape algae from areas of dead and occasionally living coral. The fused teeth beaks of parrotfish are always visible and are the foolproof method of distinguishing between the two families. —BY PAUL HUMANN AND NED DELOACH

YELLOWHEAD WRASSE



Canine teeth protrude from the mouth of the yellowhead wrasse.

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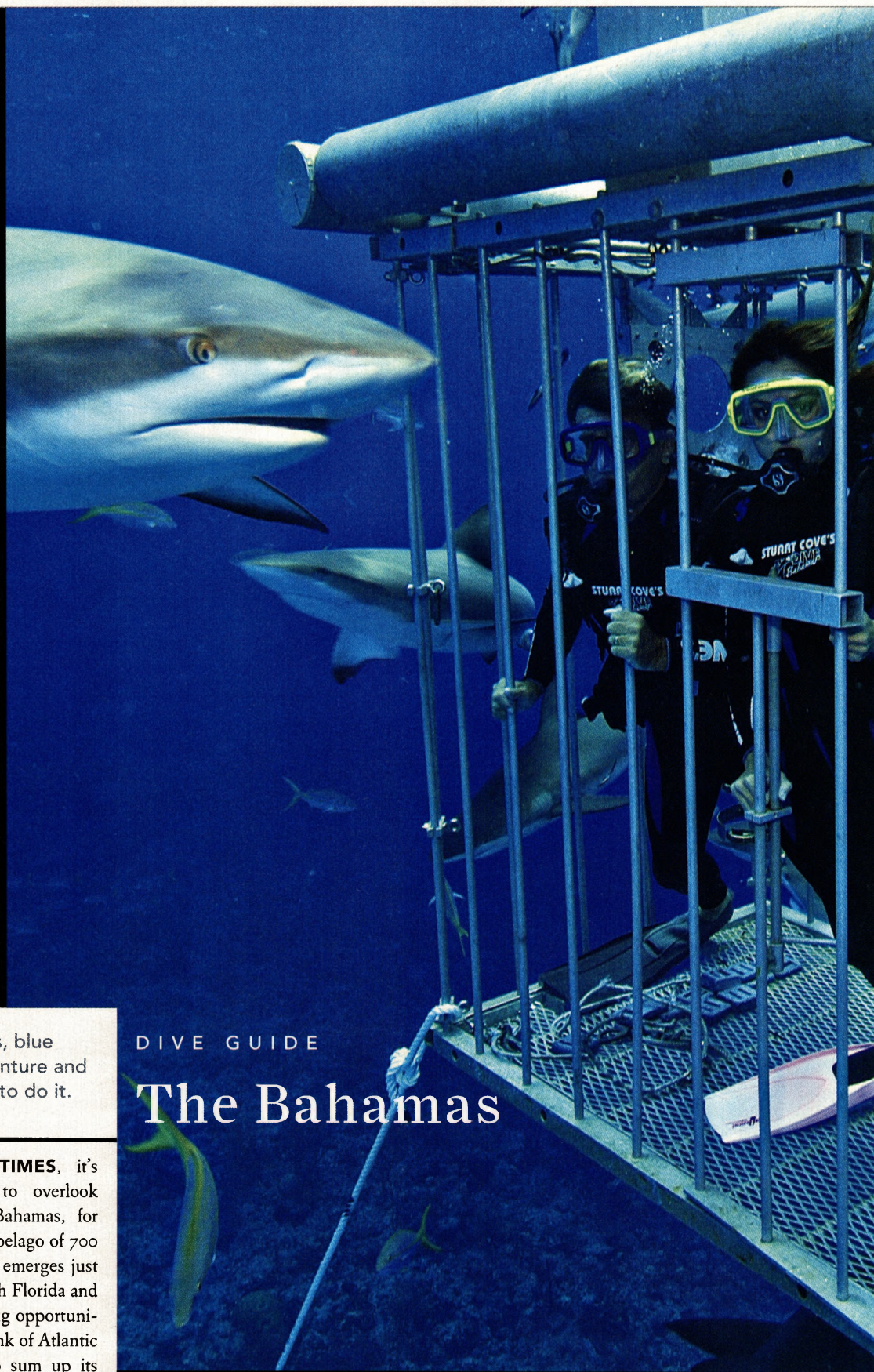
Sharks, dolphins, walls, blue holes—pick your adventure and we'll show you where to do it.

BY NICK LUCEY

SOMETIMES, it's easy to overlook the obvious. Take the Bahamas, for example—a massive archipelago of 700 sun-drenched islands that emerges just over the horizon from South Florida and contains a lifetime of diving opportunities, spread out over a chunk of Atlantic the size of Wyoming. To sum up its

DIVE GUIDE

The Bahamas





Stuart and Michelle Cove take shelter off New Providence, one of several islands in the Bahamas that offer regular shark encounter dives.

offerings in a book is difficult enough; in a magazine article it's nearly impossible. Whether you're looking for wreck diving, big animal encounters or lush reefs, to curl up with a good book in a hammock or roll the dice in glitzy casinos, for good nightlife or a good night's sleep, you'll find it.

Many people sample just one or two islands in the Bahamas and make sweeping generalizations about the rest of them. To do this is to shortchange this island nation of multiple personalities. There is perhaps no bigger contrast in the Caribbean than the one between bustling Nassau or Freeport and the pastoral Out Islands. Many of the islands look similar, but each is completely different.

Before diving was a glimmer in the eyes of most Caribbean destinations, divers were beating fins down to the Bahamas. Operators like Stuart Cove's, UNEXSO and Stella Maris recognized early on that they'd need to keep divers busy—whether by staging dolphin encounters or feeding sharks on underwater scooters. They've accomplished their mission; now, it's time for you to reap the benefits of their hard work.



Riding Rock's bar on San Salvador is decorated with dive bric-a-brac collected over the decades.

The eastern edge of Long Island rises sharply, and then abruptly drops to the sea.



(BAHAMAS' BEST) Shark Feeding

SHARK FEEDING STARTED at Long Island about three decades ago and continues throughout the islands today. More than 100,000 divers have safely witnessed these feedings in the Bahamas. Safety is emphasized, and divers are urged to avoid having exposed skin and dangling white snorkels from their masks.

WALKER'S CAY > Shark Rodeo is the dive that made Walker's Cay famous. This unique brand of shark feeding features a frozen bait ball that draws as many as 100 animals at a time. It's possible to see reef, bull and lemon sharks all on the same dive.

NEW PROVIDENCE > Thousands of divers a year make a beeline for the shark sites here. Places like Shark Alley, Shark Arena and Shark Runway, mid-depth reefs with an abundance of Caribbean and blacktip reef sharks, are the backdrops for countless toothy photos.

LONG ISLAND > The folks at Stella

Maris Resort were feeding sharks in the mid-1970s before it was cool. With a depth of about 30 feet, Shark Reef is one of the island's most popular dives.

DON'T OVERLOOK > Dangerous Reef in the Exumas; Bull Run Reef off Bimini; Shark Dive off Marsh Harbour.

(BAHAMAS' BEST) Dolphin Encounters

MOVIES INCLUDING *Thunderball* and *Cocoon* were filmed in the Bahamas, but don't forget about *Flipper*, which was also shot here. It's no wonder why—this place is loaded with dolphins.

BIMINI > The surest encounter with spotted dolphins can be found off this island at White Sand Ridge on the flats of the Little Bahama Bank.

GRAND BAHAMA AND NEW PROVIDENCE > The planned encounters off Grand Bahama and New Providence provide guaranteed adventures with dolphins.



(BAHAMAS' BEST)

Wall Diving

LOOK AT A TOPOGRAPHIC MAP and you'll immediately notice that the island chain is perched on the edge of the abyss. Light blue on the charts immediately gives way to dark blue at the Tongue of the Ocean and along the southeastern edge of the archipelago.

SAN SALVADOR > San Salvador (also known as Watlings) is the undisputed capital of Bahamas wall diving. At Doolittle's Grotto, a series of crevices leads you from the sand on top of the wall to a sloping bank of coral riddled with swim-throughs.

NEW PROVIDENCE > Another contender in the wall diving arena is New Providence, which is perched on the abyssal Tongue of the Ocean. Grab a scooter and zoom out.

CROOKED ISLAND > Far off the beaten track is Crooked Island and The Black Forest, where currents nourish a thick black coral jungle, warp sponges and

help attract reef fish, grouper and lobsters.

DON'T OVERLOOK > Chub Cay Wall off the Berry Islands; Andros's Hanging Gardens, Giant's Staircase and Turnbull's Gut.

(BAHAMAS' BEST)

Wreck Diving

OVER THE CENTURIES, the islands and islets of the Bahamas have snared seafaring vessels like an enormous net. Not so good for sailors, but great for divers like you.

GRAND BAHAMA > *Theo's Wreck* is a 230-foot steel freighter sitting on its port side in 100 feet of water and is the island's signature artificial reef. The *Sugar Wreck* is also a must-dive.

LONG ISLAND > The *MV Commerbach* is Long Island's big attraction—upright, intact and sitting on the edge of a deep drop-off in 100 feet of water. Totally encrusted, this intentionally sunk vessel is home to grouper and enormous tube sponges.

ELEUTHERA > In 1865, a Confederate smuggler departed from North Eleuthera with a heavy load—a locomotive and several railroad cars. He never made it; the *Train Wreck* sank during a storm and

now sits in 25 to 35 feet of water.

NEW PROVIDENCE > Stuart Cove's Dive Bahamas sank the 200-foot *Ray of Hope* in July, the island's newest wreck. It sits next to the *Bahama Mama*, another classic New Providence wreck.

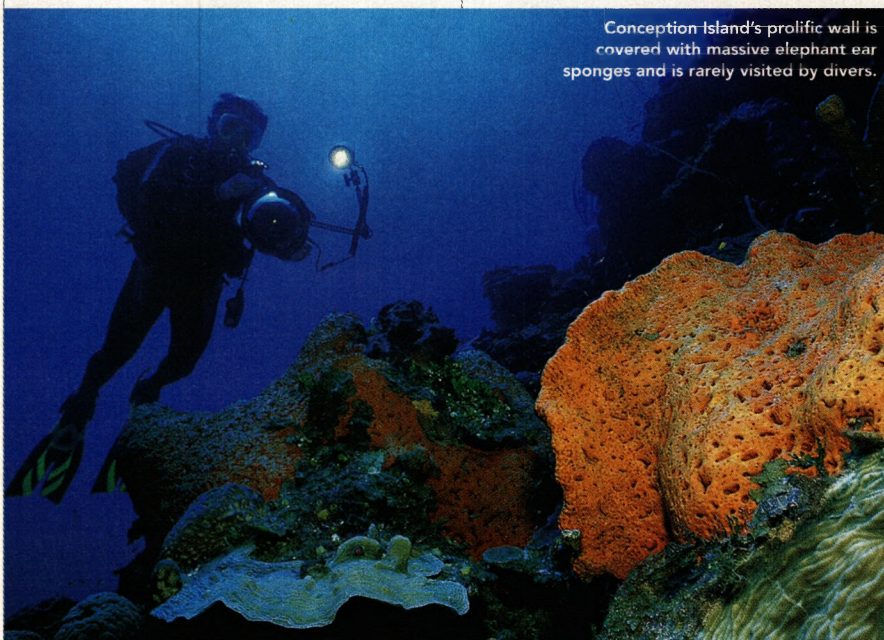
DON'T OVERLOOK > The *San Jacinto* off Green Turtle Cay; *Bimini Barge* off Bimini.

(BAHAMAS' BEST)

Blue Holes

THE BAHAMAS' limestone skeleton is the perfect breeding ground for blue holes, or underwater cave systems that meet the sea. The coast of Andros, the Bahamas' largest island, is riddled with them, but you can find them throughout the chain.

ANDROS > The biggest blue hole in the Bahamas is simply called The Big Blue Hole and is a complex of three levels that are dived separately. This vertical cave is made up of numerous dark cave passages and was once known as King Kong's Cavern. Unless you're cave-certified, stick to the uppermost portion of the dive, circling the edge of the cavern past rugged limestone formations.



Conception Island's prolific wall is covered with massive elephant ear sponges and is rarely visited by divers.



Long Island's MV Commerbach sports a couple decades of growth at 100 feet.

GRAND BAHAMA > Take the spiral staircase to Ben's Cave off Grand Bahama, a great example of the flooded caverns that dot the limestone islands.

NEW PROVIDENCE > The Lost Ocean Blue Hole is a vertical cavern that gapes open in just 30 feet of water on a sand bottom that's popular with southern stingrays and nurse sharks.

EXUMAS > At Angelfish Blue Hole, tidal action brings in millions of gallons of nutrient-rich water, which paints the walls in the breathtaking colors of a million sponges.

(BAHAMAS' BEST)

Nightlife

YOU KNOW THE NIGHTLIFE is good when Ernest Hemingway makes a special point to get here to party. As a general rule, nightlife on New Providence and Grand Bahama is more energetic and loud; in the Out Islands, more low-key.

BIMINI > The Compleat Angler may be the country's favorite watering hole—after all, it was Hemingway's.

GRAND BAHAMA > Turn back time and act 18 again at the spring break hot spot Captain Kenny's.

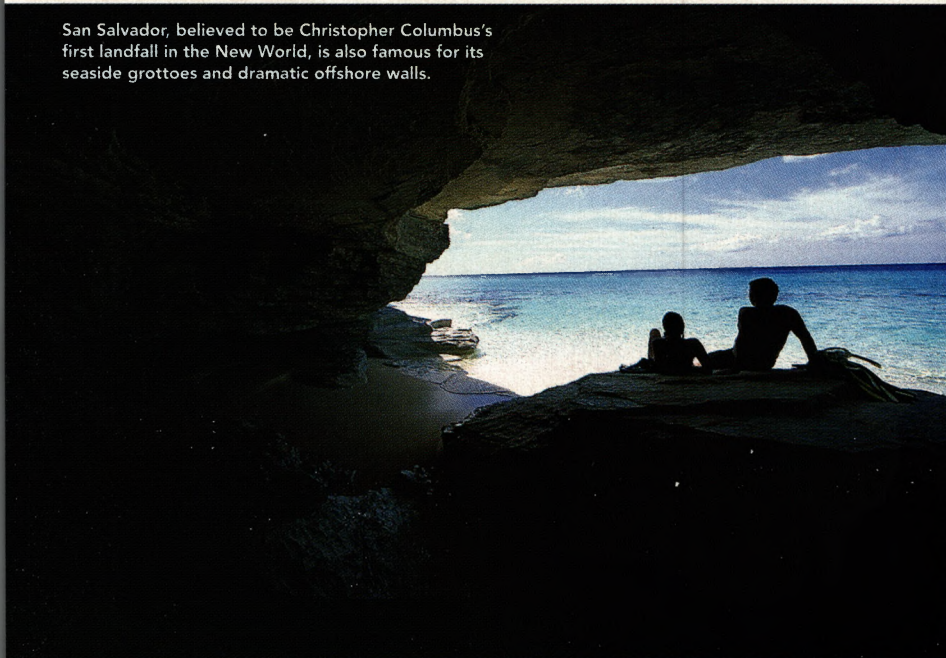
NEW PROVIDENCE > Real rock stars head to Compass Point right outside Nassau, where you might witness a fashion shoot or music video being filmed while you sip on a Cosmopolitan. They're still wondering who let the dogs out at The 601 Club—the Baha Men's old stomping grounds—and dancing the night away in sweaty fashion at The Zoo.

(BAHAMAS' BEST)

Beaches

WITH 700 ISLANDS, lots of sun and warm, clear water, life's a beach down here. You're guaranteed to find a stretch of sand to suit your fancy on any island, whether it's to people-watch on New Providence or

San Salvador, believed to be Christopher Columbus's first landfall in the New World, is also famous for its seaside grottoes and dramatic offshore walls.



Grand Bahama or to relax in seclusion in the Out Islands.

GRAND BAHAMA > The island boasts 60 miles of sandy shoreline, and Xanadu Beach is perhaps the best swath of it.

HARBOUR ISLAND > The Travel Channel named Pink Sands Beach one of the top 10 beaches in the world for 2003.

NEW PROVIDENCE > Stumble off the plane and onto some of the best beaches in the Caribbean, including Cable Beach and Old Fort Beach, or Paradise Island's Cabbage Beach.

DON'T OVERLOOK > The Abaco's

Tahiti Beach; Eleuthera's Ten Bay Beach; the Exumas' Saddle Cay and Lee Stocking Island.

(BAHAMAS' BEST)

Photo Opportunities

UNDERWATER PHOTOGRAPHERS are so demanding. They want special treatment on the boat, they travel with tons of gear and are unhappy with any diving conditions that are less than perfect. And they're welcomed with open arms in the Bahamas.

Checking loads of camera gear isn't a problem on the major carriers that connect North America and Europe with Nassau and Freeport, but is a logistical consideration when taking a puddle jumper to the Out Islands. Try to pack light, but if you can't, make sure your gear is protected in hard cases and be prepared to pay an excess-baggage fee. Once settled in on your island of choice, you can rest assured you'll probably be shooting in some of the best visibility that the Caribbean region can offer.

(BAHAMAS' BEST)

Family Activities

WHILE SOME MIGHT ARGUE that more developed Nassau and Freeport are ideally set up to handle the logistics of a family vacation, we would argue that any island in the Bahamas is a great place for kids to learn about the environment above and below the water, be safe and have fun. Swimming, fishing, beachcombing, nature hikes, cultural tours, shopping and just bonding with the family are all possible on any of the islands. And snorkeling is a no-brainer. Clear, warm and calm water—the right ingredients for perfect snorkeling, and the Bahamas has it all. Bring at least a mask, fins and snorkel for each member of the family. SD

SIX MORE WAYS TO PASS THE TIME

Be a Good Consumer: The islands of New Providence and Grand Bahama are a mecca for duty-free shoppers. Don't miss the chance to hunt for bargains at Nassau's Straw Market.

Conch Yourself Out: If you've never eaten the meat of the shellfish *Strombus gigas*, you'll have plenty of opportunities to change that fact in the Bahamas. Try it any which way—

fried, cracked, in a salad, in chowder or as a steak. **Look Through the Glass:** If your family isn't into diving or snorkeling, they can still see what they're missing at Atlantis

Resort's 11-million-gallon aquarium on Paradise Island—the world's largest artificial marine habitat. **Go Fish:** The Bahamas are legendary among anglers for good reason.

You can fish off any of the islands, but some of the most productive are Andros, the Exumas and Bimini. **Tee Off:** After your morning dives, hit the links at any of a handful of golf

courses on Grand Bahama, New Providence and Abaco. **Roll the Dice:** There are four casinos in the country, two on Grand Bahama and two on New Providence.





The Best of Roatan

Scores are in on the operators and resorts of Honduras's most popular island.

A COLLECTION OF WRECKS, excellent macro photography opportunities, pristine seamounts and the longest barrier reef in the hemisphere have created a divers' haven in the Bay Islands of Honduras. Three large islands—Roatan, Utila and Guanaja—plus countless smaller ones make up this jungly archipelago where divers rule. Here, our readers rate four operators and resorts on Roatan, the largest of Honduras's Bay Islands.

DIVE OPERATORS

Anthony's Key Resort

TEL: (800) 227-3483, (954) 929-0090

WEB: www.anthonyskey.com

96.8 PERCENT OF RESPONDENTS said they would dive with this operator again.

READERS SAY: K.B., Foster City, Calif.: "This is a superb operation. Their efficiency and service has been honed over the years, but it has not become the sort of factory that other large Caribbean operators have become ... The fleet of custom boats and the well-chosen and maintained rental gear are first-rate ... Our dive

guide was outstanding—best I've seen in 31 years of diving ... The onsite chamber is reassuring for those of us who are watching our 40th birthday disappear in the rearview mirror." July '03. Z.S., Metairie, La.: "They make it so easy to dive. The gear storage is 20 feet from the dive boats ... You get four single-tank trips a day, so you don't have to worry about 'missing the boat' ... You're assigned to a boat for the week with the same divemaster. It's a small group (eight or so), so you get to know one another. Boats are not combined when they're not full ... This dive operation has a very patient dive staff for inexperienced divers." Aug. '03.

FEATURES: Gear storage; retail facility; camera rinse tanks; unguided shore diving; solo

The dive operation at Anthony's Key Resort earned high marks for boats, staff and value.



shore diving; snorkel trips; specialty certifications; universal referral; intro to scuba; camera, digital and video rental; E-6 processing; nitrox; rebreathers; SASY; technical diving; wireless internet service.

BEST PACKAGE: See package under Anthony's Key Resort listing, p. 44.

(SCORES)

Overall **A+**. Staff **A**.

Boat/Facilities **A+**. Value **A**.

Bay Islands Beach Resort

TEL: (800) 4-ROATAN, (610) 399-1884

WEB: www.bibr.com

90 PERCENT OF RESPONDENTS said they would dive with this operator again.

READERS SAY: N.Y., Allen, Texas: "After the first dive, the dive staff knew what to expect from you and let you dive your own profiles ... Briefings were short and direct ... Anything you need, just ask, and they will do their best to provide it, if they can." May '03. J.R., DeRidder, La.: "Very pleasant and knowledgeable dive staff." June '03. J.H., Richmond, Texas: "The boats were not adequately maintained or really suitable for a good diving experience." March '03.

FEATURES: Gear storage; retail and repair facilities; camera rinse tanks; separate boats for advanced divers; unguided diving; solo diving if certified; snorkel trips; specialty certifications;

universal referral; intro to scuba; camera rental; E-6 processing; nitrox; rebreathers; SASY; technical diving; handicapped-accessible; wireless internet service.

BEST PACKAGE: See package under Bay Islands Beach Resort listing, p. 45.

(SCORES)

Overall **B+**. Staff **A-**.

Boat/Facilities **B**. Value **B+**.

CoCo View Resort

TEL: (800) 282-8932, (352) 588-4132

WEB: www.cocoviewresort.com

82.4 PERCENT OF RESPONDENTS said they would dive with this operator again.

READERS SAY: *C.M., San Angelo, Texas:* "The staff goes out of their way to ensure your diving experience is as enjoyable as possible. At the same time, they are protective of the environment and critters, while encouraging a safe atmosphere for everyone." Jan. '03. *J.K., Bedford, Pa.:* "The dive facilities are very good." Jan. '03. *B.M., Arden, N.C.:* "The whole facility, staff and schedule are geared to divers. They are to be commended for their attention to divers' needs. There is very little for a nondiver to do except kayak, snorkel, relax in the sun, read and unwind." Dec. '02.

FEATURES: Gear storage; retail and repair facilities; camera rinse tanks; separate boats for advanced divers when requested; unguided diving; solo diving; snorkel trips; specialty certifications; universal referral; intro to scuba; camera, digital and video rentals; E-6 processing; nitrox; handicapped-accessible; REEF field station; wireless internet service.

BEST PACKAGE: See package under CoCo View Resort listing, p. 45.

(SCORES)

Overall A-. Staff A-.

Boat/Facilities A-. Value A-.

Fantasy Island Beach Resort

TEL: (800) 676-2826, (011) 504-455191

WEB: www.fantasyislandresort.com

85.7 PERCENT OF RESPONDENTS said they would dive with this operator again.

READERS SAY: *G.P., Langley, B.C.:* "I had a problem with a leaking depth gauge after it had been repaired by one of their shop staff, who was trying to lend a helping hand. When I came back from lunch, the gauge had been replaced by a qualified technician and my gear was set up for the afternoon. The point is that the staff went the extra mile to assume responsibility for the problem, even though it ended up costing them money." Nov. '02. *B.F., Vernon, B.C.:* "Well-run, regular gear maintenance, superb staff." Nov. '02.

FEATURES: Gear storage; retail and repair facilities; camera rinse tanks; unguided diving; snorkel trips; specialty certifications; universal

referral; intro to scuba; camera rental; E-6 processing; nitrox; rebreather airfills; SAS; handicapped-accessible.

BEST PACKAGE: See package under Fantasy Island Beach Resort listing, p. 45.

(SCORES)

Overall A-. Staff A.

Boat/Facilities B+. Value A.

RESORTS

Anthony's Key Resort

TEL: (800) 227-3483, (954) 929-0090

WEB: www.anthonyskey.com

85.7 PERCENT OF RESPONDENTS said they would stay at this resort again.

READERS SAY: *K.B., Foster City, Calif.:* "Although I'm sad to see the old basic cabins disappear one by one, the demand for the new, air-conditioned cabins is obviously high. It's nice to see that AKR has kept most of its rustic charm and 'jungle compound' flavor while upgrading the comfort of the quarters. Most surprising was how many families I saw in a week. To some hard-core divers, this may be an unpalatable change. Personally, I thought it was great. AKR actively markets itself as a family resort, then provides lots of activities for kids." July '03. *Z.S., Metairie, La.:* "Food is great, but the menu is limited. Bungalows are very clean and tidy, but I would highly recommend getting one with air-conditioning in the summertime." Aug. '03.

FEATURES: Small private beach on premises; 24 rooms with air-conditioning; porch or sun-deck off rooms; restaurant; bars; entertainment; kayaks, sailing and watersports; babysitting; children's programs; all-inclusive packages; credit cards accepted.

BEST PACKAGE: Seven-night, all-inclusive, low season dive packages start from \$599 p.p., dbl. occ., and include hotel accommodations, full American meal plan, three one-tank boat dives per day, two one-tank night boat dives, tanks,



Fantasy Island Beach Resort and onsite dive operation scored well with readers.

weights, buoyancy control workshop, reef ecology lecture and fish ID slide show, daily dolphin presentations, welcome cocktail, picnic on Tabyana Beach, island fiesta night, horseback riding, kayaking, canoeing, entrance to Roatan Museum, and Roatan airport transfers; does not include 16 percent tax.

(SCORES)

Overall A-. Service A-.

Accommodations B+.

Restaurant A. Value A-.

Bay Islands Beach Resort

TEL: (800) 4-ROATAN, (610) 399-1884

WEB: www.bibr.com

60 PERCENT OF RESPONDENTS said they would stay at this resort again.

READERS SAY: *R.W., Clay, N.Y.:* "Quiet, peaceful, beautiful location with great views. This is a dive resort that is very laid-back. We felt more like family than guests ... We stayed in the new beach house with a large shared deck on each level. Large, clean rooms with good storage for clothes and gear." Feb. '03. *N.Y., Allen, Texas:* "They are the most accommodating people we have ever met." May '03. *J.H., Richmond, Texas:* "The air-conditioning did not work properly. Poor ventilation in the bathroom. The food was only fair." March '03.



FEATURES: Beachfront property; air-conditioning in rooms; balconies off rooms; restaurant; bars; entertainment; kayaks, sailing and watersports; babysitting; children's programs; handicapped-accessible; all-inclusive packages; credit cards accepted.

BEST PACKAGE: Diver and snorkeler packages including meals, three dives a day, night dive, unlimited shore diving, guided and unguided snorkeling, air-conditioned room with ocean view and airport transfers. Low season rates start at \$655 p.p., dbl. occ.

(SCORES)

Overall **C+**. Service **A**.

Accommodations **C**.

Restaurant **B-**. Value **B-**.

CoCo View Resort

TEL: (800) 282-8932, (352) 588-4132

WEB: www.cocoviewresort.com

79.4 PERCENT OF RESPONDENTS said they would stay at this resort again.

READERS SAY: *W.J., San Antonio, Fla.:* "I liked the spacious, over-the-water rooms." May '03. *B.M., Arden, N.C.:* "Great resort. Like an upscale scout camp. Best resort that we have visited during eight years of diving the Caribbean." May '03. *G.R., Verona, N.Y.:* "Rooms were simple and oriented toward roughing it. This is not a fancy resort with luxury accommodations.

This is a resort that specializes in simple accommodations that give the guest a true tropical experience. Our room was an over-the-water cabana with an open screen wall on one end." Dec. '02. *B.L., The Woodlands, Texas:* "The food is the weakest part of their operation." Dec. '02.

FEATURES: Beachfront property; air-conditioning in rooms; balconies off rooms; security box in rooms; restaurant; bars; entertainment; hot tub/sauna; spa; fitness center; kayaks, sailing and watersports; babysitting by advance arrangement; handicapped-accessible; all-inclusive packages; credit cards accepted.

BEST PACKAGE: Limited Date Special is \$699 for diver or snorkeler, plus tax, for Dec. 7 and Dec. 13, 2003, departures only. Seven-night package includes oceanfront accommodations; welcome cocktail; airport transfers; three full meals daily (breakfasts to order, full lunch and dinner buffets with salad bar and choice of entrée); barbecue on private cay; picnic on private cay; unlimited beach diving (including barrier reef, *Prince Albert* wreck and night diving); two boat dive trips including one tank at select-

Note: Scores are based on a response of more than 6,000 surveys. Overall scores for Roatan dive resorts and operators are derived by averaging their individual scores based on staff, boats, facilities and value. To ensure statistical validity, only those resorts and operators that were rated by 25 or more readers are included here. Changes or improvements may have been made since information was gathered and may not be reflected in the scores.

ed site and optional drop-off wall dive (up to four tanks daily); tanks, weights and belts; free use of ocean kayaks and nonmotorized beach equipment; hot tub and exercise equipment.

(SCORES)

Overall **B**. Service **A-**.

Accommodations **C+**.

Restaurant **B-**. Value **B+**.

Fantasy Island Beach Resort

TEL: (800) 676-2826, (011) 504-455191

WEB: www.fantasyislandresort.com

100 PERCENT OF RESPONDENTS said they would stay at this resort again.

READERS SAY: *M.D., San Marcos, Texas:* "Fantasy Island has improved their accommodations 100 percent. The food was very good every day ... We were there two weeks, and the staff was helpful and pleasant ... If you want an affordable resort, then Fantasy Island is worth consideration. We loved the improvements made at the resort, and they deserve some applause for them." Sept. '02. *P.V., Dana Point, Calif.:* "The room was always cleaned after the first dive trip. I have no complaints." Sept. '02. *B.F., Vernon, B.C.:* "If you're not diving, there's very little to do. Luckily, the diving is awesome." Nov. '02.

FEATURES: Beachfront property; air-conditioning in rooms; telephone in rooms; balconies off rooms; restaurant; bars; entertainment; pool; tennis courts; babysitting; children's programs; all-inclusive packages; credit cards accepted.

BEST PACKAGE: Seven-night, eight-day package is \$820 p.p.; 16 percent tax not included.

(SCORES)

Overall **A-**. Service **A+**.

Accommodations **B-**.

Restaurant **A**. Value **A+**.

SD

12 Hot Deals for the Cold Season

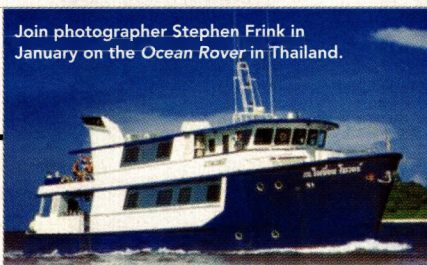
Save big this winter on travel to dive destinations from Thailand to Tobago.

ANDAMAN SEA, THAILAND

Photo Tour Aboard Fantasea Divers' Ocean Rover

1 THE DEAL: Fantasea Divers announces the Stephen Frink MFT Photo Tour aboard the *Ocean Rover* in Thailand's Andaman Sea. Frink and Thai-

Join photographer Stephen Frink in January on the *Ocean Rover* in Thailand.



land photo guru Mark Strickland will be onboard for two back-to-back charters Jan. 16-26 and Jan. 27-Feb. 6, 2004. These dates coincide with the region's dry

season, which means sunny days and clear vis. The weeklong charters are \$2,895 plus port and park fees, and are limited to 16 passengers. (Waterhouse Tours, 800-272-9122, 305-451-2228, info@waterhousetours.com, www.waterhousetours.com)

BELIZE, PAPUA NEW GUINEA, TOBAGO

Peter Hughes Diving Offers Last-Minute Travel Auctions

2 THE DEAL: Purchase last-minute live-aboard bargains auction-style on select Peter Hughes charters in December. Bid on a week aboard the *Wind Dancer* in Tobago (minimum bid, \$1,000), *Star Dancer* in Papua New Guinea (minimum bid, \$1,200) or the *Sun Dancer II* in Belize (minimum bid, \$1,300). Log on to

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peterhughes.com to find out how to place your bid via e-mail or fax.

If you're not the bidding type, Peter Hughes is offering a flat 20 percent off charters in January and February 2004 aboard the *MV Star Dancer* in Papua New Guinea. The vessel embarks from Walindi Plantation on East New Britain Island and offers a variety of itineraries including Kimbe Bay, Father's Reef, Witu Islands and Lolabau Island. (800-932-6237, dancer@peterhughes.com, www.peterhughes.com)

ROATAN, BAY ISLANDS, HONDURAS

CoCo View Resort Holiday Cheer

3 THE DEAL: Spend the holidays at CoCo View Resort. Two weeks at the resort includes diving and accommoda-

tions in one of the resort's 25 oceanfront rooms, three full meals daily and transfers for \$1,400 p.p., dbl. occ., plus 12 percent tax. Unlimited barrier reef wall and wreck diving right from the beach 24 hours a day. Free use of ocean kayaks and non-motorized beach equipment, hot tub and exercise equipment. Optional high-speed internet access, spa service and tours. Available dates: Dec. 13-27, Dec. 27-Jan. 10. (Roatan Charter, ccv@roatan.com, www.roatan.com)

AMBERGRIS CAYE, BELIZE

Complete Mayan Princess Package

4 THE DEAL: Book seven nights at the Mayan Princess on Ambergris Caye and get five days of two-tank diving, round-trip local air and taxi transfers, a 15-minute parasail trip over the reef, tax

and service charge, for \$799 p.p., dbl. or triple occ. One free complete package for groups of 16 or more, and a free night dive for the entire group and complimentary continental breakfasts. Each room is oceanfront with kitchen, air-conditioning, phone and cable. Offer good Dec. 15 through April 30, 2004. (800-850-4101, princesshotel.com)

GRAND TURK, TURKS & CAICOS

Free Day, Night and Car When You Book Early

5 THE DEAL: Get one free night, one free day's diving and a free car for the week when you book early for the summer of 2004. Seven nights at the Island House and six days of diving with Oasis Divers starts at \$750 p.p., dbl. occ. You must book by Dec. 15 for stays from April through October 2004. Oasis and

See 21 Ways Divers Run Out Of Air Reasons Why **Sharing Air is NOT** the Solution Get the **FREE Safe Diving Checklist**

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CE



DIVE DEALS

Osprey Beach Hotel are also offering group savings for seven-night packages July through October 2004. This is a great opportunity to dive some of the Caribbean's best walls. (Caribbean Dive Vacations, 888-403-3483, info@caribbean-divevacations.com, www.caribbeandive-vacations.com)

BELIZE BARRIER REEF

\$200 Off Select Aggressor Charters

6 THE DEAL: To celebrate their 16 years in Belize, the Aggressor Fleet is offering divers the opportunity to explore the walls of Turneffe Islands Atoll and Lighthouse Reef Atoll for \$200 off

the standard rate. Charters Jan. 3-March 13, 2004, are now \$1,895 p.p., dbl. occ. Some restrictions apply; call or e-mail for details. (800-348-2628, belize@aggressor.com, www.aggressor.com)

ST. CROIX, U.S. VIRGIN ISLANDS

Hotel Caravelle Dive Packages

7 THE DEAL: This hotel on the waterfront of historic downtown Christiansted on St. Croix is offering two packages: six days/five nights, plus two 2-tank dives from \$525; four days/three nights, plus two 2-tank dives from \$349. Rates are based on double occupancy and are valid through April 14, 2004. The hotel features air-conditioned rooms with private bath, mini-refrigerators, cable TV and a freshwater swimming pool. (800-524-0410, www.hotelcaravelle.com)

TOBAGO

Blue Waters Inn/Aqua-Marine Dive Packages

8 THE DEAL: From Dec. 15, 2003, through April 30, 2004, get seven nights' standard oceanfront accommodations, five days of diving, plus transfers, for \$735 p.p., dbl. occ. From May 15 to Oct. 15, 2004, get seven nights' standard oceanfront accommodations, five days of diving and transfers for \$471.13 p.p., dbl. occ. Mention Rodale's Dive Deals to get this special rate. Topsides activities at the resort include hiking, bird-watching, rain-forest touring, waterfalls, tennis and relaxing on its secluded beach. Below the surface, enjoy drift diving in the nutrient-rich water that has made Tobago famous. (Blue Waters Inn, 800-742-4276, www.bluewatersinn.com)

BAHAMAS

Save \$100 on Blackbeard's Cruises

9 THE DEAL: Book a weeklong cruise on one of Blackbeard's three 65-foot sailing sloops for \$719 per per-

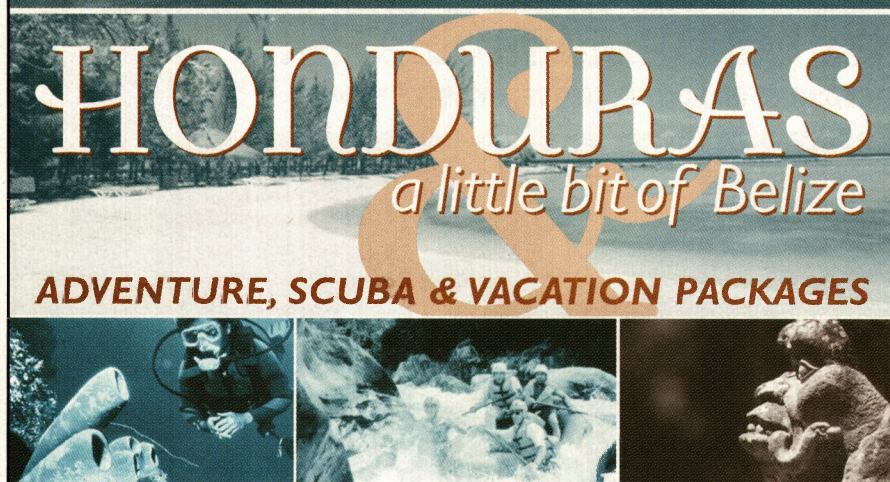


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CAYO ESPANTO, BELIZE

Luxury on the Barrier Reef

10 **THE DEAL:** Cayo Espanto may be one of the Caribbean's most luxurious dive resorts. Daily villa rates, which include all meals and drinks, start at \$895 until Dec. 15, 2003; from \$1,095 Dec. 16, 2003, through Jan. 7, 2004; from \$995 Jan. 8 through Dec. 15, 2004. Charters are \$60 for a one-tank dive; \$95 for two-tank dives. The resort is situated within close proximity to some of the area's best dive sites, and private trips can be arranged. Cayo Espanto is a small island just to the southwest of popular Ambergris Caye. Accommodations at Cayo Espanto consist of five "casas," ranging in size from 1,100 to 2,500 square feet. (888-666-4282, www.aprivate-island.com)

NEVIS

Oualie Beach Resort Dive Packages

11 **THE DEAL:** Book five nights at the Oualie Beach Resort on Nevis for \$706 p.p., dbl. occ., and get accommodations in a deluxe room, three days of two-tank boat diving, full breakfast daily, and taxes and service charges. Seven nights, including five days of two-tank boat diving, deluxe accommodations, full breakfast daily and taxes and service charges, is \$999 p.p., dbl. occ. Blackout dates may apply during Christmas and New Year's. (869-469-9735, reservations@oualie.com)

CURAÇAO

Enjoy the Best of Both Worlds with Bob the Fish

12 **THE DEAL:** Book seven days in an apartment at the golf course at Blue Bay Curaçao Golf and Beach Resort, and get five days of morning golf and unlimited afternoon shore diving at

Bob the Fish Dive Center, one of Curaçao's newest dive operations. Or, if you'd prefer, you can dive in the morning and play golf in the afternoon. You'll also get two days of two-tank boat diving and transfers. Package price is \$999. (www.bobthefishdivecenter.com, nmgoud@curlink.com)

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GERAR

G U I D E

BY JOHN BRUMM



52



54



56



58

Our job is never done. Month after month, we take the dive industry's latest and greatest gear to task in laboratories and on remote reefs. We poke and prod, push and pull, disassemble and dissect. When the smoke clears, the equipment that stands out above the rest can wear the coveted Testers' Choice title.

In each issue of this magazine, you can count on Scuba-Lab to make every effort to gather reliable objective and ergonomic data so we can draw conclusions about the performance of gear in specific categories. This isn't easy, and it doesn't come cheap. But that's OK, because we're the only dive magazine to go to these lengths to provide our readers with useful, truthful information about scuba equipment.

The following pages highlight our Testers' Choices for 2003. We also showcase some of the models that earned Testers' Choice in 2002. They are still in production and available at your local dive store.

60 WIDE-VIEW MASKS

62 HIGH-STRETCH 3MM WETSUITS

63 DIVE LIGHTS

64 5-6MM DIVE BOOTIES

65 BOAT BAGS

REGULATORS

THIS PAST SUMMER, we strapped 24 of the industry's newest regulators to a computer-controlled breathing machine in Florida for three days, then took the regs into the depths off California with our test team for another three. More than 1,750 data points were recorded in the lab. Another 1,350 data points were collected from the in-water portion of the testing, plus several pages of tester comments. Here are the eight easiest breathers from the tests.

TOP PICKS

A **ATOMIC AQUATICS B2**

The B2 was the top reg in our tests—it received perfect simulator scores and the highest total score in our in-water testing. An easy breather in all positions and the only reg that earned an "excellent" for dryness. **\$699**

B **APEKS ATX100** This reg delivered the lowest across-the-board work of breathing in our testing. The first stage is "over-balanced," and the second stage adjustment knob actually makes a difference in breathing resistance. Dry and comfortable. **\$649**

C **APEKS ATX40** The ATX40 was the top performer on the breathing machine with its "over-balanced" first stage and balanced second stage. It breathes dry and smooth in all positions. **\$469**

D **DACOR Eagle Pro DPD** The Eagle Pro DPD is lightweight, compact and dives like a dream. Dynamic Flow Control provides consistent breathing performance at all depths. The positive-click dive/pre-dive switch is clearly marked, so there's never a question of which mode you're in. **\$399**

E **OCEANIC 02 Tech** This reg was designed specifically for mixed-gas diving. The green and yellow second stage and modified first stage are assembled in a clean room to qualify for use with 100 percent oxygen. Available with a DIN valve only. **\$425**

F **POSEIDON Xstream Dive** The Xstream Dive is a unique regulator designed with continuous positive pressure. A smooth, dry breather in awkward positions, even upside down. The compact second stage is very comfortable, and exhaust bubbles vent off to the side. **\$655**

G **ZEAGLE Envoy** This was the only reg in its price class to earn perfect simulator scores, and it also delivers among the best in-water performance. An easy and extremely dry breather in all positions. **\$299**

H **ZEAGLE Envoy Deluxe** It's similar to the Envoy, but made even better with a resistance adjustment knob that allows you to tune it to diving conditions. The Envoy Deluxe earned perfect simulator scores, breathes great in the water, and is dry and comfortable. **\$349**

WHAT TO LOOK FOR IN A REGULATOR

➤ External work of breathing of 1.5 J/L or less at the depths you dive (see "Best New Regs," Nov. '03 issue). ➤ The best performance and range of features in your price category.

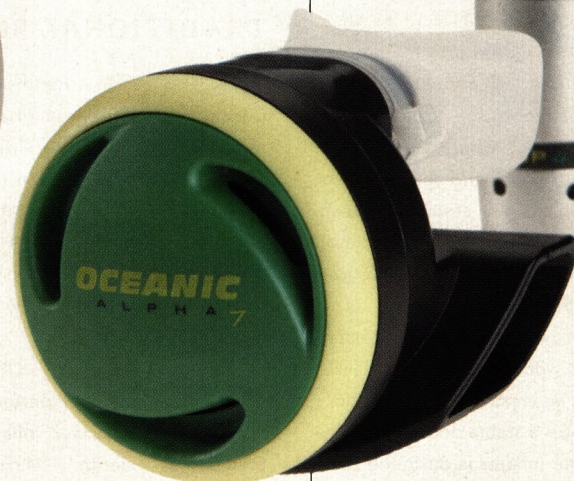
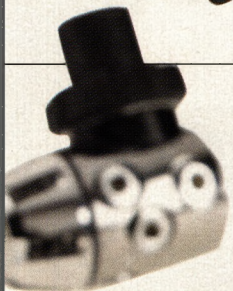




2002'S TOP REGULATOR PICKS

Last year, we put 69 regulators to the test. Here are the top performers:

- > **APEKS** AT20
- > **AQUA LUNG** Legend, Legend LX, Titan & Titan LX
- > **ATOMIC AQUATICS** M1, T1x & Z1
- > **GENESIS SCUBA** Atlas
- > **INTERNATIONAL DIVERS** Seaira Spirit Flowby
- > **IST SPORTS** Proline R20 & R10
- > **MARES** MR12 Axis & Proton
- > **SCUBAPRO** MK2 Plus/R190, MK16/S550, MK25/S550 & MK25T/S600T



BUOYANCY COMPENSATORS

THIS YEAR, SCUBALAB tested two oft-overlooked categories of BCs: those designed specifically for women, and traditional, jacket-style, non-weight-integrated models. Two teams of divers thoroughly evaluated 17 women's BCs, and our testers don't put up with design shortcomings that men often shrug off, especially when it comes to fit and comfort. They came up with six clear favorites. Our traditional jacket-style, non-weight-integrated BC tests proved that there's still a strong argument to be made for keeping it simple. Out of 13 models evaluated, four were top performers, proving that when it comes to BCs, less can sometimes be more.

TOP PICKS WOMEN'S BCs

A DACOR Elite Big performance at a small price. This jacket-style weight-integrated BC has a unique "over-molded" backpack design that provides interior comfort and exterior durability. The power inflator is the right size for a woman's hand. Weight system uses squeeze buckles backed by Velcro. **\$419**

B DUI Aurora Classic One classy jacket-style BC, with velvet-finish padding, especially in the back/lumbar area, a neoprene neck roll and finished edges throughout. There are even two built-in stainless-steel retractors. With DUI's highly touted Weight & Trim 2 ballast system. **\$538; \$478** (without ballast system)

C GENESIS SCUBA Athena Light as a feather, yet well-padded and loaded with adjustments for a snug fit. Its "Mini-Pac" offers the benefits of both hard and soft backpack designs. Very stable at depth. Easy-to-operate power inflator. Jacket-style. Weight-integrated. **\$430**

D MARES Ariel The best of both worlds—a traditional jacket with an expandable rear bladder creates a stable ride. Responsive power inflator is designed to fit

a woman's hand. Special shoulder swivel buckles vastly improve strap routing. Weight-integrated. **\$499**

E OCEANIC Isla QLR This BC just feels good. Weight-integrated, jacket-style BC with high-cut hips and padded shoulder straps. A streamlined power inflator fits perfectly in smaller hands. One of the easiest weight-ditch systems available. **\$479**

F SHERWOOD SCUBA Luna Heavenly. With an air cell and cummerbund cut to conform to female curves, and a "Half-Pac" backpack that offers soft pack comfort with hard pack stability. Responsive power inflator. Jacket-style, weight-integrated. **\$450**

TRADITIONAL BCs

G DACOR Rav Penthouse performance at a bargain-basement price. A unique "over-molded" backpack design that is both comfortable and stable. Duroskin exterior protects BC from diving's hard knocks. Pocket is large and easy to access. **\$249**

H MARES Vector Origin Few frills, but lots of performance. Excellent power inflator. Stable at depth. Minimal



WHAT TO LOOK FOR IN A BC

➤ Correct fit in the middle of its adjustment range while wearing your exposure suit. ➤ Preferences in buoyancy location (jacket-style with buoyancy beneath the arms, or back-buoyancy) and weight systems (integrated or non-integrated). ➤ Buoyant lift—in your size—that matches your particular diving style. In general, 12 to 24 pounds for tropical divers, 20 to 40 pounds for temperate water divers, and 40 to 80 pounds for technical divers.



padding but no body squeeze since the bladder inflates away from the body. Lightweight and comfortable. **\$299**

1 SCUBAPRO Glide 500

Scubapro's most basic BC. Featuring felt lining throughout, wide shoulders with lots of adjustment and curved lumbar support. Extremely stable at depth. Huge pockets are easy to access. With a molded carry handle. **\$335**

J SEAQUEST Pro

The best-fitting BC of them all. Excellent swivel buckles optimize shoulder strap routing. There's padding in back as well as on the shoulders. The BC inflates away from the body, eliminating squeeze. Very stable at depth. **\$425**

2002'S BEST WEIGHT-INTEGRATED BCs

Weight-integrated BCs are becoming more and more common on dive boats these days. ScubaLab didn't test weight-integrated BCs in 2003, but will be reviewing them in the March 2004 issue. In the meantime, here are the top performers from the 2002 reviews—all are still on the market and are great choices.

- > **AQUA LUNG** Malibu RDS and Maverick RDS
- > **GENESIS SCUBA** Phantom
- > **OCEANIC** Flex QLR
- > **SCUBAPRO** Classic Plus
- > **SEAQUEST** Balance, Black Diamond, Pro QD and Pro Unlimited
- > **SHERWOOD SCUBA** Avid and Freedom
- > **ZEAGLE** Concept II Pro

DIVE COMPUTERS

DIVE TABLES HAVE BECOME about as rare as double-hose regulators and horse-collar BCs. If you don't own a dive computer, you're cheating yourself out of bottom time. The following 14 models were tops in our testing this past winter, including four air-integrated, nine non-air-integrated, and one that'll go either way. Over the years, the bar has been continually raised (we'd like to think at least partly due to our gear reviews), and each and every one of these computers more than meets the challenge. Numbers and icons are bigger than ever, ways to program personal options have become no-brainers, and best of all, useful features have become the rule, not the exception.

TOP PICKS

A AERIS Atmos 1 For divers on a budget. Has all the important functions, but is light on features. Comes with a large screen and green-yellow-red bar graphs. **\$279.95**

B AERIS Atmos 2 Compact and low-profile, the Atmos 2 is loaded with features. Big numbers and multicolored bar graphs make it easy to track data. Nitrox-capable and has a screen guard. **\$409.95**

C AERIS Atmos ai Streamlined air-integrated computer. Large horizontal screen, huge primary digits and makes generous use of graphics and green-yellow-red highlights. Reads tank pressures in increments of 10 psi up to 5,000. **\$739.95**

D CRESSI-SUB Archimede A full-featured wrist-mounted computer. Has a well-designed screen with prompts that show you exactly which mode you're in. "Safety Factor" adjustment allows you to add an extra level of conservatism. **\$438**, wrist (also available in console versions)

E DACOR Darwin Super user-friendly and packed with features. Powered by a pair of AAA batteries, the backlight can be programmed to stay on through-

out the entire dive. Visual and audible alarms and scratch-proof screen. **\$329**, wrist; **\$399**, console

F MARES M1 Similar to the Darwin, but without color highlights. Calculates deco stops down to 80 feet. Wrist, **\$359**; console, **\$449**

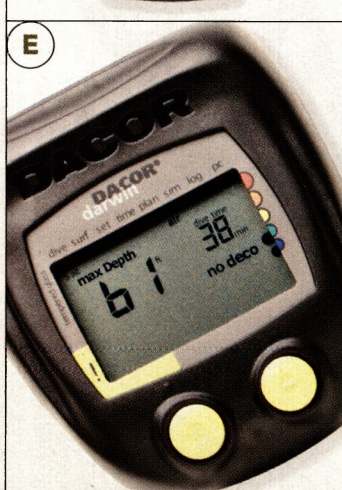
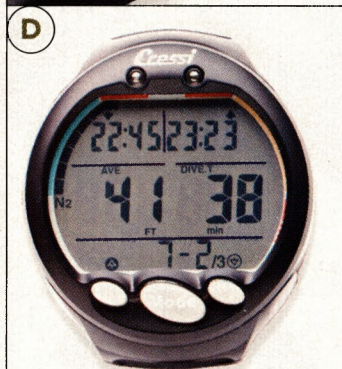
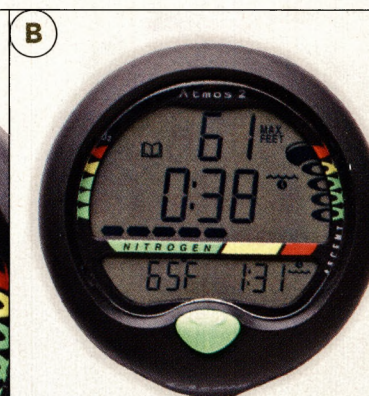
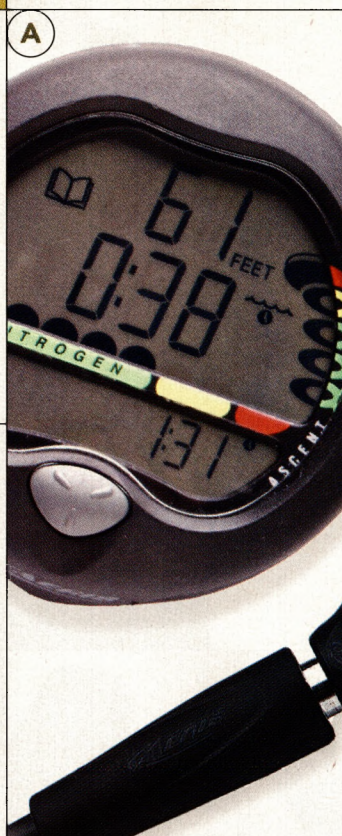
G OCEANIC Versa An intuitive design for divers on a budget. Uses graphic displays and three-color bar graphs, and big and bold digits. Light on features, but easy on the wallet. From **\$285**

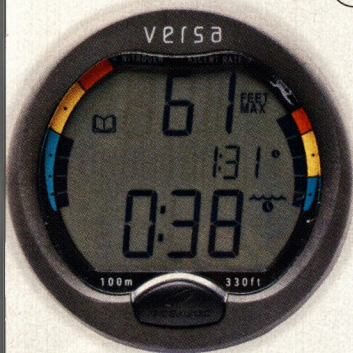
H OCEANIC Versa Pro A feature-loaded version of the Versa. Programmable backlighting and a flashing LED light that's synched with a disarmable audible alarm. Nitrox-capable. Screen cover is replaceable. From **\$429**

I OCEANIC DataMax Pro Plus 2 Air-integrated with a big vertical screen, big numbers, and lots of color highlights to increase readability. Tank pressure is displayed up to 5,000 psi in increments of 10. From **\$735**

J SCUBAPRO/UWATEC Smart Pro Its unique algorithm takes into account diver behavior to increase safety. With its own padded storage bag and SmartTrak software with infrared PC interface. **\$638**

K SCUBAPRO/UWATEC Smart Com Same as the Smart

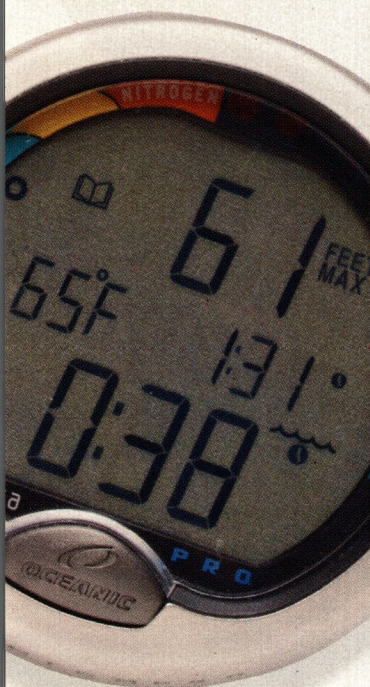




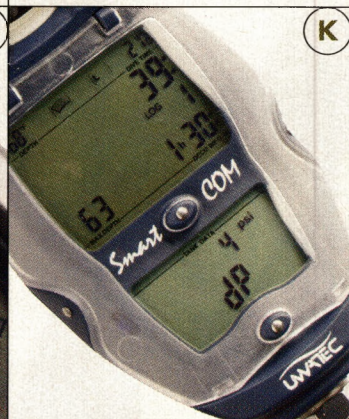
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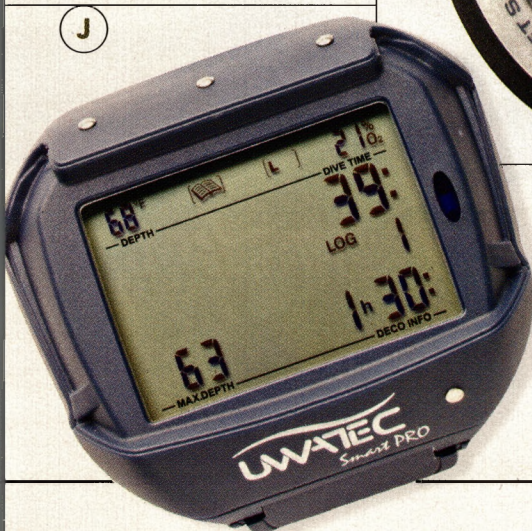
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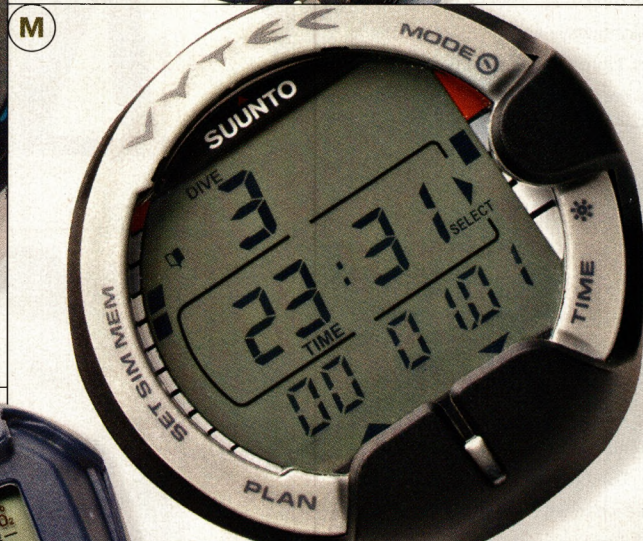
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Pro, but air-integrated. Reads tank pressure to 4,350 psi in increments of one. Desat time and time to fly are calculated instead of using a standard countdown. **\$896**, standard hose; **\$910**, quick-disconnect hose

L SHERWOOD SCUBA Wisdom An air-integrated computer with one of the most intuitive displays available, including generous use of bar graphs. Prompts make it easy to know what mode you're in. Tank pressure is displayed to 5,000 psi in increments of 10. **\$780**

M SUUNTO Vytac This hoseless air-integrated computer is a favorite among "techies." It uses an RGBM algorithm that tracks both dissolved and free gas. Reads tank pressure to 5,000 psi in increments of one. You can switch between three nitrox mixes during the course of a dive. **\$759; \$1,249** (with transmitter)

N TUSA IQ-600 Housed in a big shock-resistant rubber casing. The IQ-600 makes use of color highlights and features unique bar graphs that don't leave you guessing which mode you're in. It can be adjusted so that on a two-tank dive, one tank can be programmed for air and the other for nitrox. **\$468**

WHAT TO LOOK FOR IN A DIVE COMPUTER

- > A price tag that fits your budget.
- > Features most important to your diving needs.
- > An algorithm that offers either liberal or conservative computations, depending on your diving style.

FIN S

FOR THE SECOND YEAR IN A ROW, a dozen seasoned ScubaLab fin testers gathered in the Caribbean to evaluate 30 of the slickest foot rockets on the planet. This year, in the warm waters off Cozumel, our testers spent mornings conducting speed and slalom tests, and afternoons subjecting fins to the rigors of recreational diving. It was a tough job, but our team—with 125 years of collective diving experience and almost 7,000 dives under their weight belts—were up to the task. Here are their favorites for 2003.

TOP PICKS ADJUSTABLE FINS

A APOLLO SPORTS Black Bio-Fin Pro The original split fin, and still a performance leader. The fin racks up the fastest speeds in both flutter and frog kicks. In the turns, it digs right in and provides excellent control. **\$190**

B ATOMIC AQUATICS SplitFin A real speedster on the slalom course and pretty fast flat-out too. Longer-than-average blade doesn't fold up on you in a power stroke like some other splits. Nimble in the tight spots and super stable. Best buckles around. **\$189**

C ATOMIC AQUATICS Liquid Blue Identical in shape to the original Atomic SplitFin, but made of a softer thermoplastic rubber that makes the fin lighter and gives it a bit more snap. Delivers ear-bending acceleration, yet is very responsive on the reefs. **\$199**

D MARES Volo The top-performing paddle fin. Uses the Optimum Pivoting Blade, a hinge-like design that maximizes thrust. This improves stability while decreasing muscle strain. Lightweight and comfortable. **\$169**

E TUSA X-Pert Zoom Easily recognizable by the sharp downward bend of its blade, which generates a forceful

response to a relatively moderate kicking effort. Fast, maneuverable and easy to control. **\$175**

FULL-FOOT FINS

F AERIS Velocity Leader in real-world performance. This lightweight paddle fin seems to offer everything, from above-average blue-water kicking power to excellent stability. Great nonskid sole. It's even easy to put on and take off. **\$49.94**

G OCEANIC Caribe Simply awesome. A rocket on the straightaways and fast in the corners. Lightweight and nimble, this is a great open-water fin and an even better reef fin. Paddle blade has a pliable center panel. **\$49.95**

H OCEANIC Vortex V6 Much lighter than most split fins, stiffer too. The fastest full-foot split fin. Highly maneuverable, especially in tight spots like inside wrecks. **\$79.95**

I MARES Plana Avanti Tre Fastest full-foot around, and a top performer in real-world diving. The blade is designed with a three-channel "avanti" system. Stabilizers control side-slipping. Comfortable foot pocket. **\$59**

J SCUBAPRO Twin Jet Black Maneuverability is this split's middle name. When cruising reefs, it's a stable fin, delivering good acceleration for chasing down that must-get photo. **\$121**

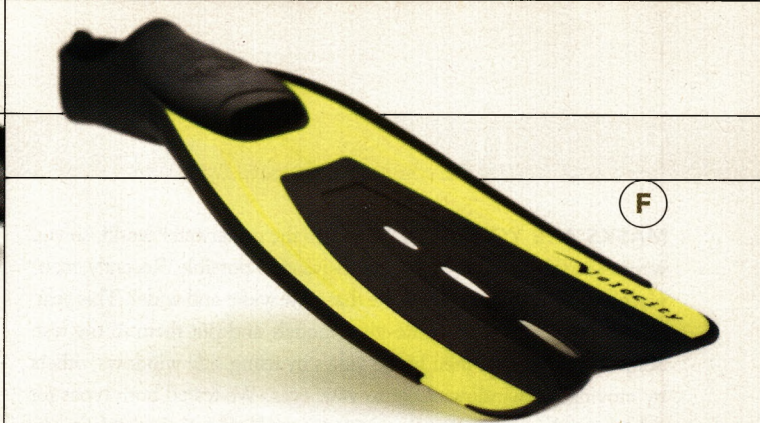


WHAT TO LOOK FOR IN FINS

➤ **Proper fit:** Your foot should fit snugly inside the pocket with no binding. ➤ **Size:** Smaller divers should use smaller fins. ➤ **Stiffness:** Less-stiff fins allow for greater diversity in the strength of the diver.



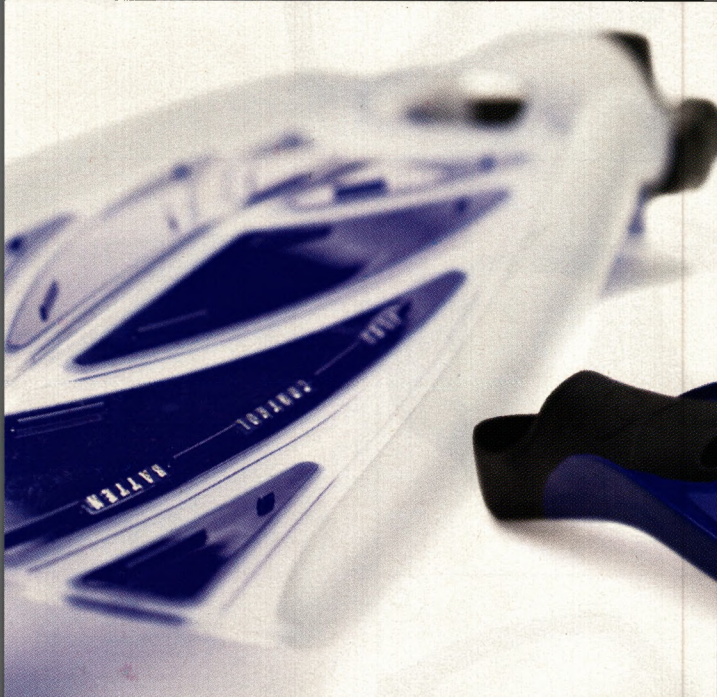
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MASKS ARE YOUR WINDOWS to the underwater world, so you want them to provide the most expansive view possible. Recently, manufacturers have managed to make that view wider and wider. This year, we got our hands on 31 wide-view models and put them to the test. Some masks achieve their broad views by using side windows; others by moving the window closer to your eyes. We tested both types for volume, and peripheral and vertical vision. We also looked at features, including special materials, lengths of skirts and strap adjustment fittings. We tested them in the water and out. Here are our top choices.

TOP PICKS

A AQUA LUNG Mythos

Looks tiny, but the view is huge. Low volume plus an excellent horizontal view. Pointed lenses improve downward vision too. One of the lowest-volume masks we've ever tested. **\$79**

B AQUA LUNG Tyke Nearly as small as the Mythos. Offers a very good horizontal view. Open-work frame combines with clear skirt for an efficient, minimalist design. **\$75**

C DEEP SEE Spectra Squarish front windows provide an expansive, comfortable view. The downward view is excellent. Strap adjusts easily. **\$45**

D H2ODYSEY Glacier 3 Frameless design folds compactly for traveling. Flat glass side windows are embedded in the skirt to enhance horizontal vision. **\$49**

E MARES X-Vision Frame shape zigs outward to maximize the sideways view, then zags downward for more downward vision. Low volume too. A very compact mask. **\$79.95**

F MARES X-Comfort &

G X-Stream Same frames, different skirts. They both have heart-shaped front windows that improve vision both to the sides and downward. Clear skirts provide some extra view. **\$59.95**

H OCEANIC Prizm Beveled

side windows eliminate the traditional corner post. Good vision along both horizontal and vertical planes. A wide, soft skirt and easy strap adjustment. **\$59.95**

I PROMATE Swift Folds flat for easy packing or to tuck into a BC pocket as a backup mask. Large, square front window gives excellent side and downward views. **\$49**

J SHERWOOD SCUBA Magnum Offering not only expansive front and side windows, but another pair of windows in the lower skirt that enable you to see your weight belt and clipped-in console. **\$79**

K TUSA Visualator Huge front window delivers outstanding vision both horizontally and vertically. The large, soft skirt is super comfortable. **\$75**

L XS SCUBA Fusion 2 Top visibility through the front window, and that doesn't count what you can see through the side windows. Also available are a version with purge and one for smaller faces. **\$65**



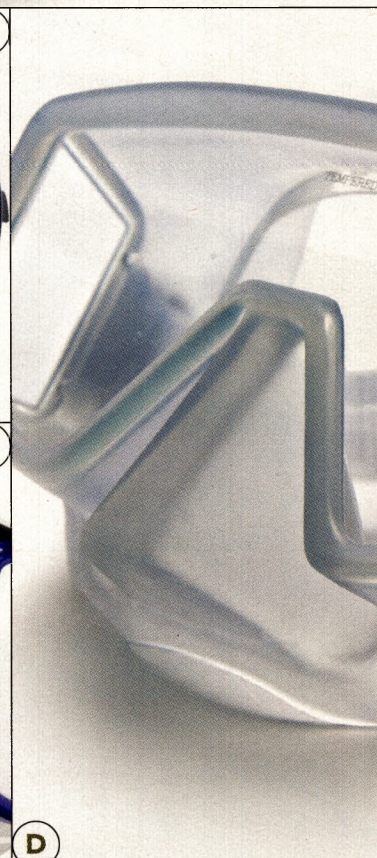
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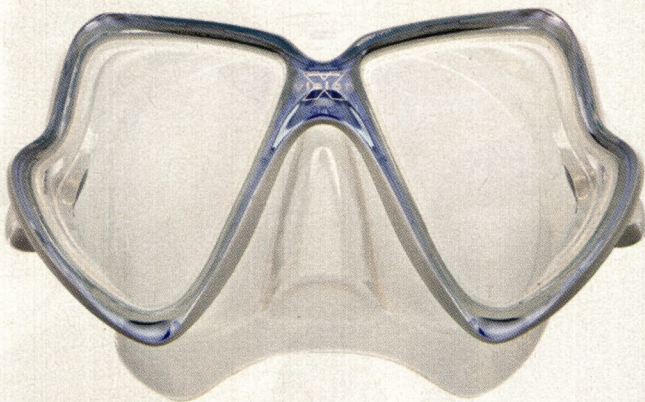
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WHAT TO LOOK FOR IN A MASK

➤ A mask skirt shape and length that enables you to achieve a good seal on your unique face. ➤ Either low volume, which is low profile and easier to clear, but can be slightly claustrophobic to some, or high volume, which typically makes for a bulkier mask, but may offer side windows and viewing ports to maximize the view. ➤ A purge for divers with facial hair or who just have trouble getting and maintaining a seal on their mask.



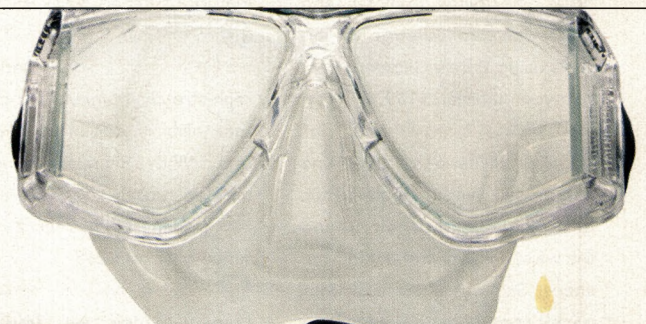
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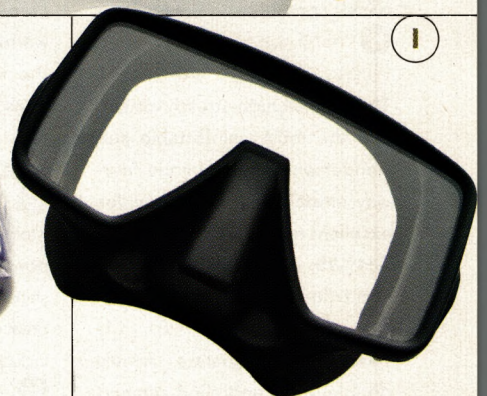
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THE DAYS OF DIVING in a rigid rubber suit are over. Today, the key to maximizing comfort while retaining heat is elasticity, and each of the following nine super-pliable wetsuits all allow you to bend, squat, turn and literally reach for the sky, without the slightest hint of resistance. The secret to this flexibility is found in the wetsuit material. Whether called Hyperstretch, Super Stretch, Ultraflex, X-Flex or Pyrostretch, they make some of the most flexible, comfortable wetsuits in the diving world.

TOP PICKS

A BARE Velocity Full Suit

Hydrostretch panels provide great flexibility. Wrists and ankles have rolled-edge O-ring seals using Bare's Glideskin gas-ket-type material. **\$139.95**

CAMARO Genesis 3 (not pictured) Standard neoprene combined with high-stretch Microskin-X-Tend panels around the waist, in back and behind the knees. Skin-out chest and back panels speed drying times. **\$275**

B HENDERSON Titanium Hyperstretch Jumpsuit

The original high-stretch wetsuit and the most comfortable suit Henderson makes. Unique four-way stretch neoprene provides excellent range of motion. 3mm, **\$249.95**; also available in 5mm and 7/5mm versions

C OCEANIC Titan 3.0

Twenty-three separate panels double-glued and blind-stitched provide very good range of motion as well as comfort. With a slick titanium lining. **\$189**

D O'NEILL 3000X Full Suit

With a skin-in neck seal

and O-ring Glideskin rolled-edge wrist and ankle seals. The suit is easy to get in and out of and has resin ink screened kneepads. Flat-lock stitched. **\$219.95**

E PARKWAY 3.2 Pyrostretch Full Suit

Made of high-stretch titanium neoprene that also is compression-resistant. With Sharkskin-in seals, molded rubber kneepads and a key pouch. Comes in a wide range of sizes. **\$265**

F SEAQUEST X-Flex 3.2

Primary panels are 3mm for warmth, while 2mm is used in the lower legs, shoulders and arms for additional flexibility. Wrist and ankle seals are rolled-edge, O-ring style. **\$225**

G TILOS 3.2 Super Stretch

Molded rubber kneepads reach down far enough to protect your shins. The suit material provides a great feel and total range of motion. Includes a key pocket. **\$280**

H XS SCUBA Men's Ti-Full Suit

A great basic suit for the budget-minded. Super Stretch panels increase comfort and flexibility. Skin-in neck seal is adjustable. Available in men's sizes only. **\$90**

WHAT TO LOOK FOR IN WETSUITS

➤ Fit, fit, fit. ➤ Neck, wrist and ankle seals that minimize water intrusion. ➤ Convenience features like zipper flaps that help seal out water, ankle zippers and durable kneepads.



DIVE LIGHTS

DIVE LIGHTS—THEY MAKE NIGHT DIVES POSSIBLE and day dives even better. This year, ScubaLab collected three dozen torches and put them through their paces. We darkened our test facility and aimed each light at a white screen. Using a digital light meter, we measured the maximum intensity at the brightest point of each hot spot, along with peripheral illumination and the quality of the light pattern. We then loaded and unloaded batteries, tested switches and switch locks, and took note of bulbs, burn times and additional features. The following 12 models really shined.

TOP PICKS LARGE PISTOL-GRIP LIGHTS

A UK Light Cannon 100

An extremely clean, bright, concentrated hot spot with lots of peripheral illumination. Its bluish-white HID beam is effective in virtually all diving conditions. **\$280**

B IKELITE Super-8 RCD

This big bruiser is tops for night diving in clear water. Powerful medium-sized beam surrounding a large, uniform concentrated beam. In lantern or pistol grip. **\$90**

C TEKITE Trek 6000 This light delivers a wide, scorching hot spot with excellent uniformity. Great choice for night dives in clear water. Its size also makes it an excellent day light. **\$49.95**

D PRINCETON TEC Shockwave II Wide dual-output beam works best in clear water on high power, in murky water on low power. A lot of punch is packed into a compact torch. **\$71.99**

POCKET LIGHTS

E UK Sunlight SL6 Same as the SL4 but longer by two inches, with two more C-cells that produce more lighting horsepower for night diving. Especially effective in murky water. **\$52**

F UK Sunlight SL4 Concentrated beam produces a powerful hot spot and good

peripheral illumination. Compact in the hand, it stores easily in a BC for use while day diving. **\$39**

G PELICAN MityLite 4AA

This little light produces a smooth, large hot spot. Stores easily in a BC pocket. Good backup light for night diving. **\$22.95**

H IKELITE PCa Lite A great little palm-sized light. The PCa delivers a small but fierce concentrated beam. Easy to use, even when wearing gloves. **\$30**

I PRINCETON TEC Tec-40 Easy to store and use. Perfect light for poking around in holes or as a back-up night diving light. **\$18.99**

J TEKITE Trek 400 EX 40 LED Traditional pocket light design with LED technology. Forty LEDs produce a cool beam for use as a primary day light or as a backup night light. **\$199.95**

MINI-LIGHTS

PRINCETON TEC K Rage and L Blast Two gotta-have utility lights. Because they're so small, you can carry them in a BC pocket for whenever you need them. Rage, **\$12.99**; Blast, **\$9.99**



WHAT TO LOOK FOR IN A DIVE LIGHT

➤ A light beam that matches the type of diving you do (bright and wide for clear water, moderately bright and narrow for limited visibility, etc). ➤ A size that delivers the goods, yet is convenient to hold, handle and store while at depth. ➤ Easy-to-use, reliable switches, as well as easy battery replacement.

5 MM & 6 MM DIVE

BOOTIES

NO GEAR GOES OVERLOOKED IN SCUBALAB TESTING, not even booties. In early 2003, we kicked the heck out of 20 dive boots in thicknesses of five to six millimeters. Our first look indicates that dive footwear has become much more substantial than the neoprene socks of the past. Today's boots have thick soles with no-slip treads, arch support, heel stabilization and more. Overkill? We don't think so. Truth is, old-fashioned booties provided little protection or comfort, especially on rocks. If you shore dive or dive from smaller dive boats, you'll definitely want to get your feet into the latest models. Here are six of the best.

TOP PICKS

A BARE Ice Boot A rugged boot. Stiff heel counter cups the heel and two layers of rubber cover the forefoot to provide better foot control and also fight chafing from the pocket. A tab is molded into it to keep the fin strap from sliding off. **\$49.95**

B DEEP SEE Orca Purge Best for beach dives. Unique EVA mid-sole channels water to the heel. Uppers reach almost to the calf to minimize water exchange between booties and wetsuit. A silicone purge releases water after the dive, and a cover protects the purge on rocky terrain. **\$80**

C HENDERSON Hyperstretch Zipperless Boot Comfortable, with an exceptionally stiff sole and heel counter to deliver great arch support. With an air-bubble "spring" under the heel like the kind you find in high-end athletic shoes. 3mm,

\$55.95; also available in 5mm and 7mm versions

D MARES Avanti For traversing shoreline rocks. Grooves in the sole let the boot flex when you walk without compromising sole stiffness. Exceptional arch support. Nice touches include a fin strap tab, a zipper pull and a finger loop behind the ankle. **\$59**

E SCUBAPRO Molded Sole Boot Aggressive lugs on the sole and heel provide good traction climbing down the bluff to the beach. The side is stiff, and the heel counter and forefoot "rails" keep your foot well under control. Cushy inner sole. **\$69**

F SEASOFT Stealth Serious dive boots with prominent lugs on the bottoms and lots of rubber in the sole. Heel and forefoot control are excellent, as is the arch support. The short zipper has been replaced with one that was used on Seasoft's discontinued Ti Pro boots. Of course, it's all black. **\$89.99**

WHAT TO LOOK FOR IN DIVE BOOTIES

➤ A stiff sole that allows you to negotiate rough terrain and cluttered boat decks, and climb ladders in comfort. ➤ Arch support to protect your feet from the weight of the gear load you're carrying. ➤ Fit—between foot and boot, and boot and fin. Make sure the beefier boots fit into your fin pockets.



BOAT BAGS

FEW THINGS WILL MAKE YOUR LIFE EASIER than a bag that's large enough to haul a day's worth of dive gear to the boat, but small enough to fit inside your larger travel bag. The 20 boat bags reviewed in 2003 come in two styles: vertical backpacks and horizontal duffels. Backpacks offer dry pouches and are easier to carry, while duffels provide more carrying capacity and ease of loading and accessing your stuff. Depending on the fabric and construction, both styles can be either lightweight and foldable or a bit stiff. Any of these eight top models will get the job done.

TOP PICKS

A AKONA AKB234 Deluxe Mesh Backpack

Wide mouth. Brass grommets. Side zipper lets you get to gear on the bottom without having to unload everything. The sternum strap is a nice touch. **\$48**

B AKONA AKB514 Mesh Boat Duffel It's hard to beat this bag for pure carrying capacity. Three-sided zipper makes it easy to load. Nifty compression straps. **\$58**

C DEEP OUTDOORS Cabo Ultra Lots of space, plus the roomiest dry pouches. Very comfy in backpack mode. Cinch strap has a special keeper. **\$50**

D DUI Duffel/Backpack Combo Unique two-compartment design—one for wet stuff, one for dry. Huge carrying capacity. Backpack system includes waist strap. Wet compartment always sits lower than the dry one. **\$58**

E STAHL SAC Cortez Convertible Mesh Duffel You probably don't have enough gear to fill this big boy. Made of tight mesh on top and fabric on the bottom. Folds compactly. Stowable backpack straps. **\$49.95**

F STAHL SAC WD16 Bonaire Mesh Backpack Radio frequency-welded waterproof pouch. Padded backpack straps. With detachable mesh pouch for small items. **\$64.95**

G TILOS Deluxe Coated Mesh Backpack This bag has it all, including a side zipper and roomy dry pouches. Using the sternum strap, it's one of the most comfortable bags in backpack mode. **\$50**

H XS SCUBA BG320 Deluxe Mesh Backpack Unique outside dry pouch makes towels and T-shirts easier to grab. With a handy side zipper and padded, plush nylon backpack straps plus a sternum strap. **\$55**

WHAT TO LOOK FOR IN A BOAT BAG

➤ On backpack-style bags, a side zipper, running vertically down the body of the bag, which allows you to access gear without unloading everything. ➤ On duffel-style bags, a three-sided zipper vastly simplifies loading and unloading. It also improves access of not only the main compartment but of any inside dry pouches. ➤ On either style, molded rubber side handles improve carrying control, and inside dry pouches need to be easily accessible even when the bag is stuffed.





Pigeon Point is a popular beach—and launching point for the boats of several Tobago dive operators.

BY ETHAN GORDON

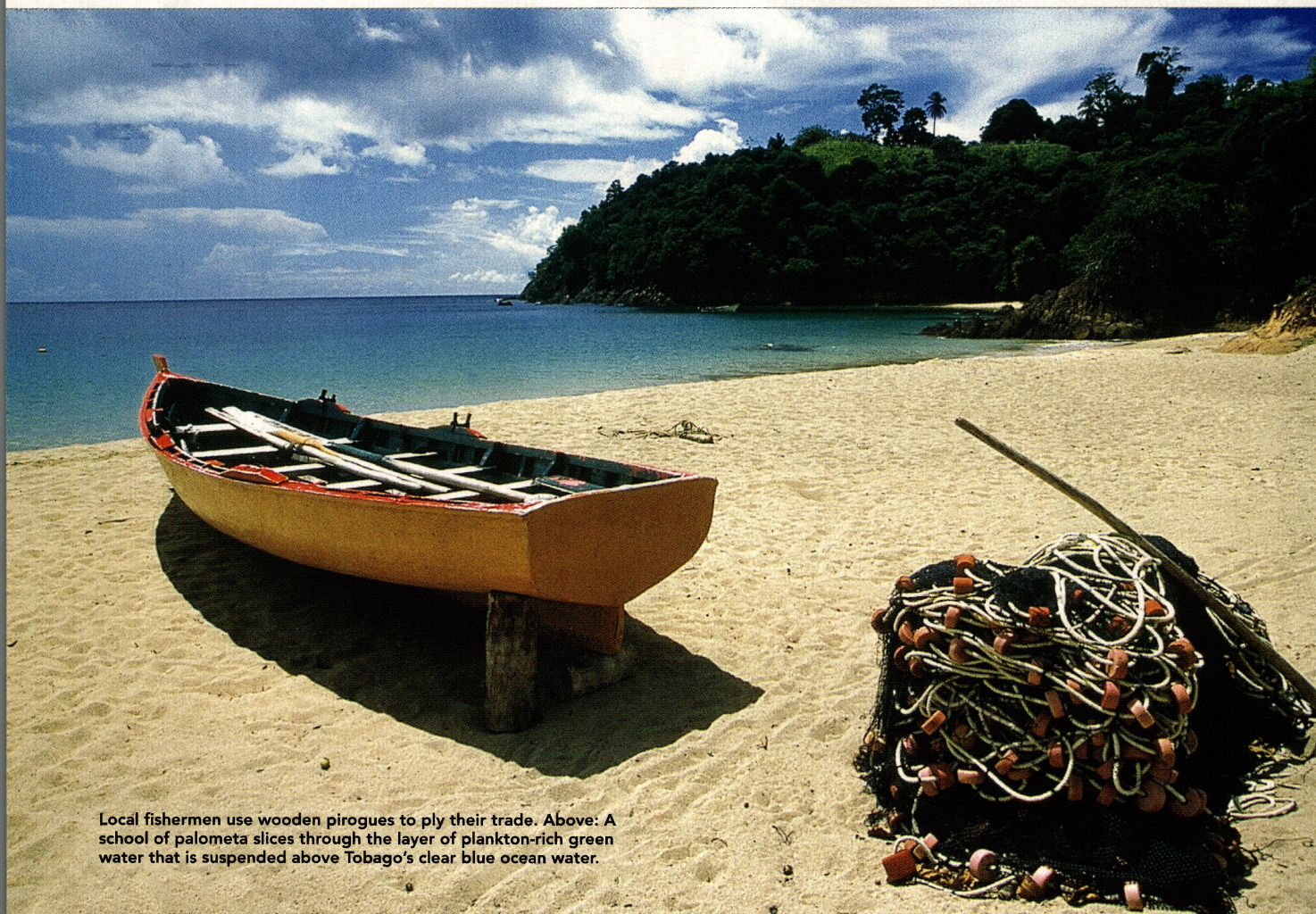
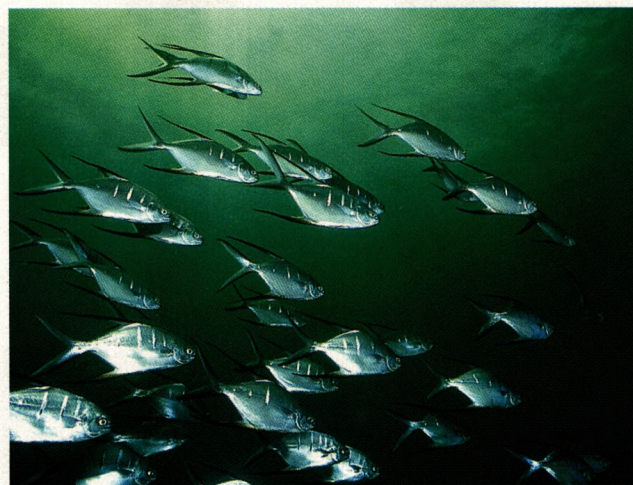
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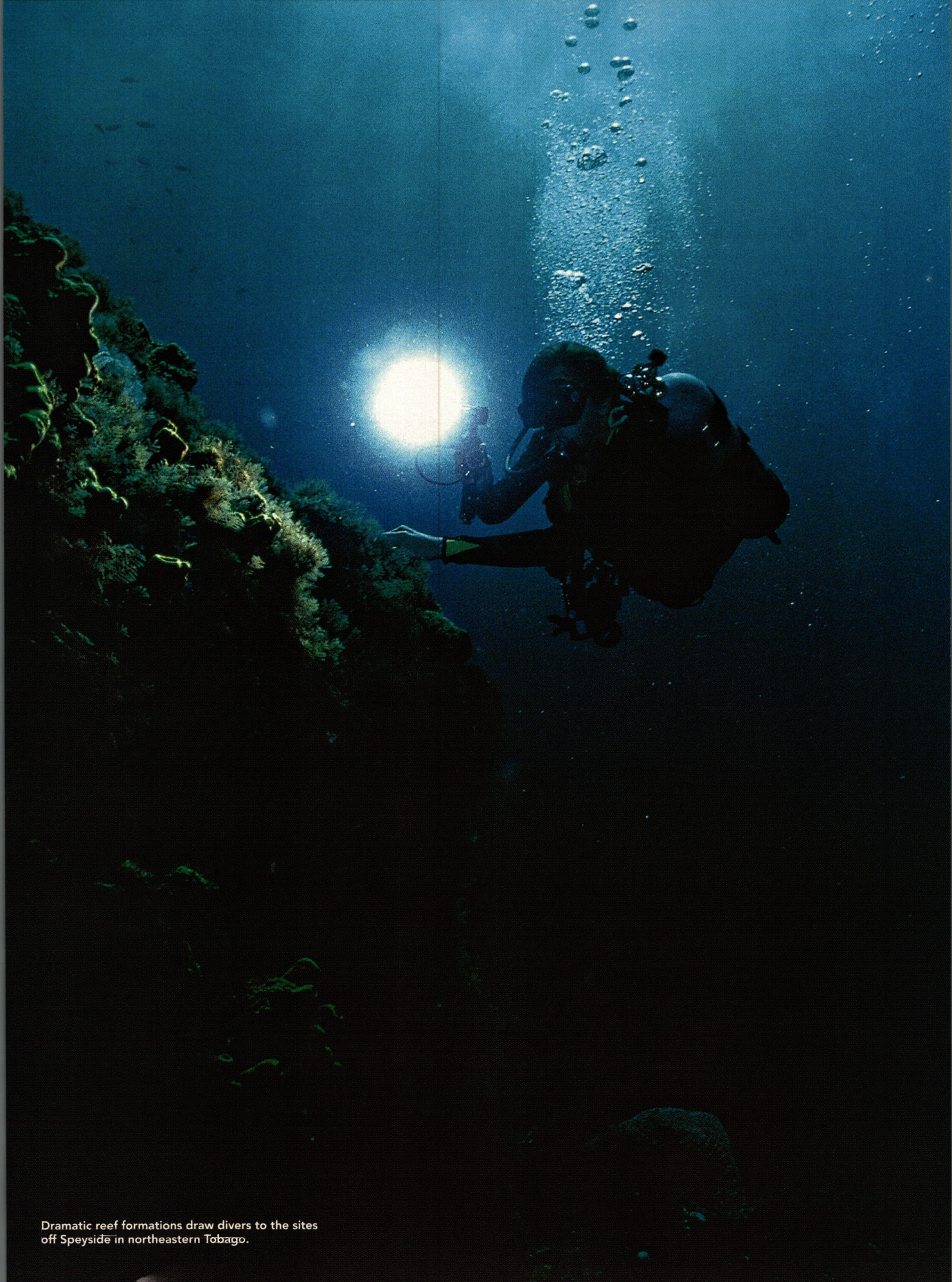
TOBAGO'S HEALTHY and prolific marine life gets its start deep in the jungles of Venezuela, where the mighty Orinoco has its headwaters. Brimming with nutrients, the Orinoco's outflow spills into the Atlantic and mixes with the Guyana Current on its northwest path toward the Caribbean. Tobago sits smack in the middle of this exceptional food supply—the current hits the island's Atlantic shore and then shoots around the northern and southern tips of the island. Sponges, sea fans and corals take advantage of the microscopic smorgasbord and grow to immense size. In fact, one of the world's largest known brain coral colonies, measuring 16 feet across, is found at a site called Kelleston Drain. But it's not just huge corals that divers come to see. Marine creatures from common Christmas tree worms to parrotfish and large plankton-feeders like manta rays and whale sharks feast on the nourishing soup of algae and protozoans that Tobago dishes out. With the Caribbean Sea on its north shore and the Atlantic Ocean on its south, Tobago has something for divers of all skill levels.

(A VISUAL TOUR
ABOVE AND BELOW)

UNLIKE THE OTHER WINDWARD ISLANDS, Tobago's length runs from east to west. The airport, located in the main city of Scarborough, and a concentration of resorts are situated on the west end where highlights include old forts, flower gardens, an 18-hole golf course and perfect beaches for sun worshippers. On the more secluded east end, the main attraction in Speyside is peaceful seclusion. Most of the resorts in this area are located in quiet little coves. In order to get a taste of both, many people split their time between Scarborough and Speyside. Between the two towns are mountains, rain forests and classic Caribbean small towns that dot the hillsides. Regardless of where you stay, you'll find a well-equipped dive shop to suit your needs. The tourism infrastructure here is growing, with a range of hotel options, dive amenities and top-side diversions. Luckily, overdevelopment has been restrained—good news for an island where ecotourism comes naturally, and even better news for divers seeking an island with true escape potential.



Local fishermen use wooden pirogues to ply their trade. Above: A school of palometa slices through the layer of plankton-rich green water that is suspended above Tobago's clear blue ocean water.

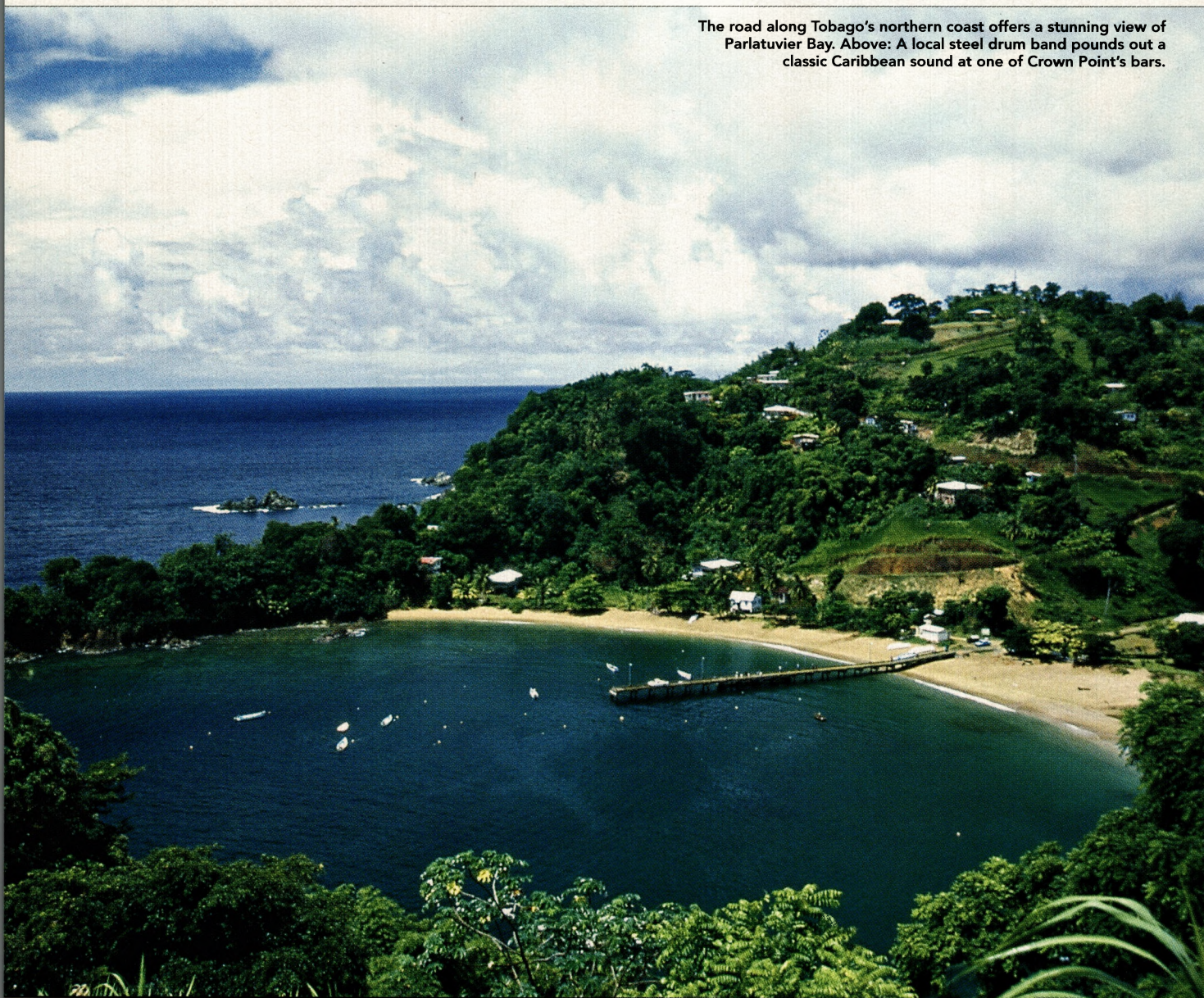


Dramatic reef formations draw divers to the sites off Speyside in northeastern Tobago.

EACH MORNING, a rainbow-colored assortment of pirogues—long, narrow fishing boats—head out to sea. Most carry local fishermen, but some ferry small groups of divers to the reefs. Most of the diving in Tobago is drift diving, and the agile pirogues are perfect for maneuvering around groups of divers. The size of the boats limits groups to a small number of divers, and they don't need to anchor, which helps protect the reef. Of course, they don't offer the amenities of the larger, more modern dive boats a few operators are now using. Under water, the occasionally strong currents that wash Tobago's reefs can provide divers with a pulse-pounding ride over the reef. For snorkelers, the big underwater attraction is the waist-deep, four-acre Buccoo Reef National Park.



The road along Tobago's northern coast offers a stunning view of Parlatuvier Bay. Above: A local steel drum band pounds out a classic Caribbean sound at one of Crown Point's bars.





Strong currents feed oversized marine life and sometimes challenge the leg strength of divers. Below: A spinyhead blenny warily peeks out from its hiding place on the reef.



ACCESS TO MOST OF TOBAGO'S DIVE SITES is limited to one end of the island or the other. From Speyside, in the northeast, you can dive visually dramatic sites like London Bridge, a natural rock arch that extends down into the water; The Sisters, twin rock pinnacles that are magnets for large pelagics including hammerhead sharks; and Japanese Gardens, a gentle slope washed by a benign current and packed with barrel, vase and tube sponges. On the island's west end, you'll find sites like Diver's Dream, a ripping drift dive with currents up to several knots; Mount Irvine Wall, where macro lovers will find nudibranchs, frogfish and more; and the wreck of the *Maverick*, where a resident Goliath grouper has set up housekeeping. For those who want a taste of both ends without the drive, Peter Hughes' *Wind Dancer* live-aboard operates around Tobago. When it comes to diverse dive attractions and stunning topside ecotourism, Tobago manages to make just about everyone happy. SD

GET THERE > For more information about Tobago, turn to In Depth, page 107, section 2.



LESSONS FOR

Life

(DIVE ACCIDENTS, CLOSE CALLS
& HOW YOU CAN AVOID THEM)

By Michael Ange

FILE :

89
#

(THIS IS A TRUE STORY,
BUT THE NAMES HAVE
BEEN CHANGED.)

BROKEN RULES, BENT DIVER

A technical buddy team ignores their training, and one diver pays the price.

ANTONIO LAY HELPLESS ON THE SURFACE. He could see the boat moving closer to him, or at least he thought he could. Everything was a fog. His feet felt like useless blocks of lead dragging him back to the depths below. As he fought to keep his face above water, Antonio tried to recall what had happened. His concentration was fading, but he remembered being entangled at 170 feet; he recalled sharply the terror of running out of gas at 210 feet. Nothing else seemed to make sense, and now even his vision was gray. Why couldn't he see? What had happened to Juan? Everything was a blur as he heard the muffled shouts of the safety divers pulling him back to the boat.



Palau, the Cradle of Diversity



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LESSONS FOR LIFE

THE DIVERS

Antonio, an enthusiastic technical diver who had just completed trimix training, was buddied with Juan, a technical dive instructor with a great deal of experience. Both divers were in their early 40s and in reasonably good health.

THE DIVE

Juan and Antonio were diving an Atlantic shipwreck in 235 feet of seawater. They planned a 20-minute dive to the main deck at 210 feet using trimix in their main cylinders, 32 percent nitrox for a travel gas and 100 percent oxygen for decompression stops.

When they reached
the deck at 210 feet,
Antonio discovered
he had just 500 psi
left in his primary tank.

THE ACCIDENT

As the divers descended to the wreck, Antonio's primary dive light failed. He had no backup, but decided to continue the dive. When they neared the ship's rigging, Antonio became entangled in heavy monofilament line, and it took Juan several minutes to cut him free.

When the divers finally reached the deck, Antonio discovered that he was down to just 500 psi on his primary gas mix. The stress of the mishaps had elevated Antonio's anxiety—and his breathing rate—to unacceptably high levels. He needed to ascend immediately.

Juan realized they didn't have time to swim back to the anchor line, so he immediately deployed a lift bag to serve as a surface marker and open-water ascent line. The line

became fouled in Juan's gear, however, pulling him up an unknown distance before he could cut himself free. Returning to the wreck, Juan was unable to locate Antonio. After a brief search, he had no choice but to begin his ascent and decompression profile.

THE RESCUE

Apparently panicked by Juan's problem with the lift bag, Antonio lost all control of his dive. According to his computer, he dropped to a maximum depth of 230 feet before ascending directly to the surface, omitting at least 39 minutes of required decompression. Surfacing down current from the boat, Antonio was already suffering the symptoms of a massive DCS hit when he signaled the boat crew for help.

A field neurological exam showed that Antonio was totally paralyzed below the waist. The boat crew immediately placed him on oxygen, contacted EMS and notified the chamber of an arriving patient. When another diver reported Juan was safely decompressing, the captain signaled another charter vessel to wait for him while Antonio's boat raced to the dock.

EMTs rushed Antonio to the local chamber, where he immediately underwent hyperbaric oxygen therapy. After a series of six treatments, Antonio regained the ability to walk, but only with assistance. He has persistent partial paralysis that will likely never be resolved, as well as bladder control problems and sexual dysfunction.

ANALYSIS

These divers violated several rules of technical diving, including the first and most important one: Any diver can call a dive, at any time, for any

reason. When Antonio's light failed and he had no backup, the dive should have been terminated. Lack of light at depth almost certainly added to Antonio's anxiety level and caused him to become entangled in the monofilament line. The entanglement was another point at which the team should have called the dive—or at least checked their gas supplies before continuing.

Both Antonio and Juan failed to follow the rule of thirds, a gas management technique where divers use one-third of their gas to ascend and descend, use one-third to explore the site, and hold one-third in reserve for emergencies. Had they followed their training, the team would have turned the dive well before Antonio reached 500 psi in his main cylinder.

Antonio's severe injuries were caused by omitted decompression, even though his regulators were functioning properly and he surfaced with 500 psi remaining in his travel cylinder and 1,200 psi remaining in his oxygen cylinder—enough to complete at least some of his required stops. In this case, Antonio's panic made him forget his training, causing him to rush to the surface. SD

LESSONS FOR LIFE

1 TECHNICAL DIVING, like any form of diving, is safe only if the rules are followed.

2 ON ANY ADVANCED DIVE, the rule of thirds must be used for gas management.

3 WHEN A PRIMARY PIECE OF EQUIPMENT fails on an advanced dive, the dive must be terminated.

4 WHEN YOU HAVE PROBLEMS that raise your anxiety level, terminate the dive.



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SWIM WITH THE BIG FISH. SPEND LIKE A GUPPY.

Dive package rates are per person and are based on double occupancy and include air transportation, hotel accommodations, diving (w/ tanks & weights), room taxes, and airport transfers unless noted.

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Yap Manta Ray Bay Hotel Includes 9 days at the Manta Ray Bay Hotel, and 17 dives. Valid December 1 - 15, 2003 & January 10 - 31, 2004	9 days/ 8 nights from: \$2399
Gezumel Presidente InterContinental/Scuba Du Includes 6 days 2-tank boat diving. Breakfast daily. Valid April 2 - November 23, 2004	8 days/ 7 nights from: \$1502
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Grenada – Abundant coral reefs around the islands afford divers the opportunity to explore the unspoiled underwater world. Divers can enjoy lazy drift dives over coral gardens or wreck dives to the *Bianca C*, the largest shipwreck in the Caribbean.

Turks & Caicos Islands, Providenciales – This destination is surrounded by the third largest coral reef system in the world, which is surprisingly close to the shore. Pristine reefs, abundant tropical flora and fauna, and shipwrecks make the Turks and Caicos Islands a world class and award-winning diving destination.

New Destinations

In November, US Airways expanded its service to Latin America and began flying to Costa Rica. And this month, it begins service to La Romana in the Dominican Republic, a popular golf and resort destination.

Costa Rica – Noted for its aquatic ecosystems and beautiful white and black sand beaches, Costa Rica provides an ideal setting for sportfishing, snorkeling, and sun bathing. Its underwater wonders range from coastal coral reefs to offshore islands. Dive spots contain diverse marine life including sea turtles, intricate coral formations, and dolphins.

La Romana – Nearby La Romana is Bayahibe, where tourists come to enjoy the beach and set sail for Eastern National Park. The Park contains over 500 species of plant life, 44 species of bird life, and abundant fauna such as iguanas, turtles, and dolphins. It is also known for its caves rich in petroglyphic art from aboriginal Indians and includes Saona Island with white powder beaches and many dive sites.

GoCaribbean network

US Airways presence in the Caribbean has expanded further since forming the GoCaribbean network, a relationship that US Airways has with three regional airlines—Caribbean Star Airlines®, Caribbean Sun Airlines® and WINAIR (Windward Islands Airways). The GoCaribbean network offers water enthusiasts nine additional destinations to visit and enjoy, including **Dominica, Saba, St. Eustatius (Statia), St. Vincent and Tobago.**

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Hang loose: Research suggests a short stop on no-deco dives could make you safer.

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DECOMPRESSION THEORY

One Minute to Safer Diving

A one-minute stop at half your maximum depth may help prevent decompression sickness. **BY JOHN FRANCIS**

ATTENTION RECREATIONAL DIVERS: You may now begin making deco stops. In fact, please do. The National Association of Underwater Instructors (NAUI) and others are now recommending that

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DECOMPRESSION THEORY

recreational divers should stop their ascents for one minute at about half their maximum depth before continuing upward to the 15-foot mark for a second safety stop. Computer makers Suunto, Mares, Dacor and Zeagle also recommend similar stops for recreational divers (see "How to Make a Deep Stop," p. 86) and the Professional Association of Dive Instructors (PADI), says it "probably won't hurt."

Why? New research into the mechanics of decompression sickness (DCS) suggests that by adding this deep stop to a slow ascent and

early 1900s. He started from the premise that DCS was caused by the formation of nitrogen bubbles in the blood and tissues when a diver ascended too rapidly to a lower pressure. It's still not proven, but modern researchers accept the theory that the "bends" is caused when bubbles of inert gas press against nerves, clog your blood circulation and panic your immune system, causing pain, numbness and paralysis.

Haldane's critical assumption was that by controlling the release of dissolved gas from a diver's tissues, we could prevent bubbles from forming.

"We all know that bubbles are formed on every dive, whether the person's got DCS or not," says Wienke. "Doppler counts show it, even for divers that haven't pushed their no-decompression limits. Bubbles are always there."

the traditional three- to five-minute safety stop at about 15 feet, recreational divers will enjoy a greater margin of safety against DCS and leave the water with less nitrogen.

"We think this is a significant change in the way people will dive," says NAUI's Tim O'Leary. "This is a quantum leap forward."

FROM HALDANE TO WIENKE

TO UNDERSTAND why NAUI and others recommend this new deep safety stop, you have to understand the basics of decompression theory, how it has evolved and how it has led to current dive practices like the 30-foot-per-minute ascent rate, traditional safety stops and now the deep safety stop.

Most modern dive tables and algorithms (the basis of dive computer programs) are based on the work of physiologist J.S. Haldane in the

And, in that, Haldane was probably "only half right," says O'Leary.

The reason? We have bubbles Haldane didn't know about. J.B. Bateman and A.R. Behnke theorized as early as 1951 that many small, harmless bubbles were forming on many dives, even "no-decompression dives." They called them "silent bubbles" because they did not seem to cause DCS. They were proven right in the late 1960s when Doppler ultrasound detectors made it possible for the first time to "see" (actually, hear) and count these bubbles in the bloodstream. Since that time, the study of bubbles has taken center stage among decompression researchers.

Basic science tells us that bubbles are much more likely if they have a tiny "seed" to form around. That's why sprinkling salt in a flat beer gives it a new "head"—the salt crystals are seeds around which new carbon dioxide bubbles form. This is

the critical insight behind the latest "two-phase" or bubble theories of decompression, including the most recent—the Reduced Gradient Bubble Model (RGBM) of Dr. Bruce Wienke, a NAUI instructor trainer and Los Alamos National Laboratory physicist.

These theories assume that bubble micronuclei or "bubble seeds" are created all the time by such things as turbulence in the bloodstream, whether we are diving or not. As divers ascend, dissolved nitrogen forms larger bubbles around these nuclei.

"We all know that bubbles are formed on every dive, whether the person's got DCS or not," says Wienke. "Doppler counts show it, even for divers that haven't pushed their no-decompression limits. Bubbles are always there."

BUBBLES BLOCK DECOMPRESSION

EVEN BEFORE they get big enough to cause DCS, these bubbles are slowing down your off-gassing. Here's what happens: In your tissues, bubbles act like lock boxes. Once inside a bubble, a gas molecule tends to stay there instead of leaving your body. "It gets isolated from the circulation," says Dr. Richard Vann, vice president for research at Divers Alert Network (DAN). "It has to diffuse back into the tissue before the circulation can cart it off to the lungs."

In your bloodstream, bubbles clump together, get trapped where capillaries branch or narrow, and prevent gas-carrying blood from reaching your lungs, where the nitrogen can be unloaded. It's all still theory, but "I'm convinced this is the way things go," Vann says. "There is experimental evidence

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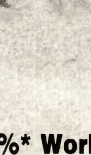
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that if you form bubbles, you retard inert gas elimination," he says.

When gas elimination slows down, bubbles grow even bigger and circulation is blocked more. At the end of the downward spiral is DCS—including those infamous "undeserved hits" that occur in defiance of all predictive DCS models.

For divers on a Haldane-based profile—one that tries to deal only with the mechanics of eliminating dissolved gas—bubbles present a problem. Unlike dissolved gas, bubbles do not leave your system faster as you ascend. Instead, they leave more slowly, Wienke explains in his book, *Reduced Gradient Bubble Model in Depth*. If you stop briefly to decompress deeper, dissolved gas is eliminated more slowly, just as Haldane assumed. But bubbles will actually leave your system faster. That's because small

bubbles, kept small by the pressure at the deep stop, will have a chance to collapse as the gas in them redissolves.

Haldane's original tables have been modified numerous times to reflect expe-

When gas elimination slows down, bubbles grow even bigger and circulation is blocked more. At the end of the downward spiral is DCS—including those infamous "undeserved hits" that occur in defiance of all predictive DCS models.

rience and growing awareness of the role bubbles play. When divers got bent, exposures were shortened, stops were added, ascents were slowed. Now-com-

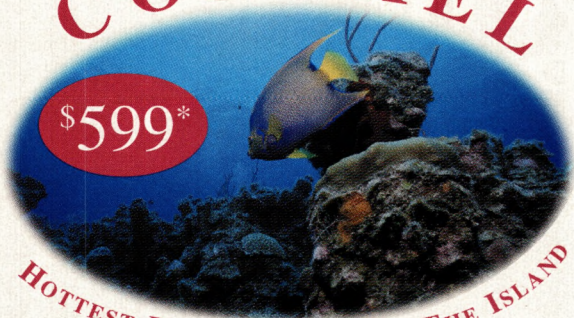
mon practices like the 30-feet-per-minute ascent rate and the 15-foot safety stop were both concessions to experience. The addition of a deep safety stop, says O'Leary, is the latest evolution, designed to deal with the physics of both bubbles and dissolved gas.

DEEP STOPS IN PRACTICE

EXPERIENCE WITH DEEP STOPS comes from the technical diving community where divers have been incorporating "dual-phase" models like Wienke's RGBM for almost a decade. Their experience has revealed the surprising fact that spending extra time making a deep stop actually shortens the overall time a diver needs for safe decompression.

"We have divers using RGBM down

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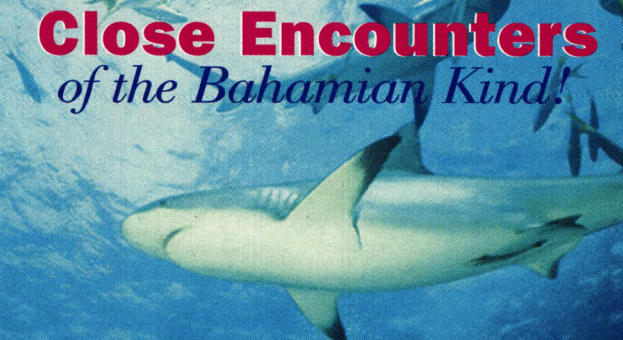
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at 300 feet for five hours," says Wienke. "Haldane deco, U.S. Navy deco, would ask them for 20 hours of decompression time. But using RGBM, they decompress and come up safely in 12 hours."

Dr. Peter Bennett, former CEO of DAN and an early proponent of deep stops, says divers in the Adriatic working with DAN Europe have come to the same conclusion, that a deep stop accelerates decompression. "Gas saturation in the fast tissues was reduced quite low indeed and bubble counts were reduced virtually to zero."

You read that right—if you spend more time stopped at depth you can end up with less nitrogen. It sounds counter-intuitive—if not nuts—and, of course, it's not that simple. The depth and time of the deep stop do matter. Here's how Wienke explains it:

Believe it or not, more time at depth could mean less nitrogen.



"Let's say a diver has been down to 90 feet until his no-decompression limit and now he's coming up. Bubbles are excited into growth by the reduced pressure. They are of varying size. The smaller ones don't grow so fast, but the bigger ones grow faster, and the dissolved gases feed into them."

"Then he stops halfway to the surface. Because he's holding himself at 45 feet, he's minimizing the gradient for in-gassing so the bubble isn't growing now. Pressure is holding the bubble, preventing it from expanding," he says. During the deep stop, gas is squeezed back out of the bubble and it begins to shrink. With less obstruction, blood flows faster, carrying redissolved gas to the lungs where it's eliminated."

Now consider that same diver following the traditional direct ascent. "If he continues up to a safety stop at 20 feet



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Will deep stops mean safer recreational diving? "Time will tell," says NAUI's Tim O'Leary.

instead of stopping for a minute, he's dumping gas into the bubble, the bubble is growing, and then anything he does in that shallow zone is treatment of bubbles, not prevention of bubble growth," Wienke says.

Vann says the ongoing Doppler studies in Europe, so far totaling 25 divers and 1,600 dives since 2000, confirm the basic theory. "There's no question that deeper stops will reduce the number of bubbles."

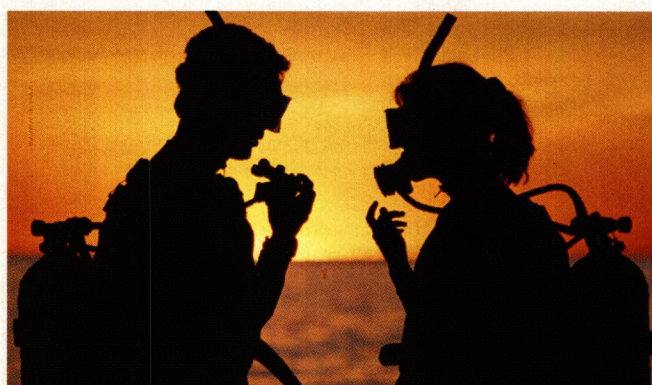
WHAT FREEWAY TRAFFIC TELLS US

IF THIS STILL SOUNDS like voodoo economics, consider the experience of millions of motorists every day in rush-hour traffic. Think of parking lots full of cars as being like tissues saturated with nitrogen. If all the cars try to get on the freeway at once, traffic slows to a crawl.

Though there are more cars on the road, the "throughput," the number of cars passing a given point in a minute, falls—just as the total amount of nitrogen leaving your body falls if too many molecules try to crowd into your circulatory system at once. Sometimes cars collide and sometimes bubbles clump together, stopping the flow entirely. But that is how rush-hour traffic "moved" for many years, and that essentially describes the Haldane method of decompression as Wienke and others see it.

Beginning with a 1969 experiment in Minnesota, traffic engineers have learned that using stoplights to meter on-ramps, to delay cars trying to enter, keeps congestion down, increases the throughput and gets everyone home sooner. Like

Continued on p. 87



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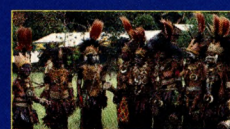
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THAT'S THE THEORY, AT LEAST

CAN DEEP STOPS REALLY MAKE RECREATIONAL DIVES SAFER? All the known science indicates that it should, but researchers are quick to admit there's much we don't know about DCS and pretty much everything we think we know is unproven. "We're very, very lucky that we get away with such a low incidence of decompression illness," says Dr. Peter Bennett. "A lot of people will speculate, but nobody understands decompression. It's all theory."

In weighing the value of deep stops, it's important to remember a few key principles.

> **ALL DIVES ARE DECOMPRESSION DIVES.** A technical diver engaged in staged decompression stops and a diver following his recreational tables are both attempting to do the same thing—eliminate dissolved gases at the fastest possible safe rate. That's what we mean by decompression, and when we call some dives "no-decompression," we really mean "no deco stops required."

> **A SAFETY STOP AND A MANDATORY DECO STOP ARE NOT THE SAME.** Or not quite the same. The difference is the degree of risk in missing the stop. Because the tech diver's nitrogen load is so high that a DCS "hit" is thought likely if he misses a stop, we call the stop mandatory. Recreational divers within no-stop limits have a nitrogen load small enough that a hit is thought unlikely, even if he misses safety stops, which we call optional. A safety stop is meant to add additional safety to an already safe dive. But remember ...

> **IT'S ALL A MODEL, NOT A MONITOR.** All decompression theories, tables and dive computer calculations are—at best—a mathematical model of what's believed to be happening inside your body. Not even the best dive computer on the market today can look inside your tissues and see what's really going on. Instead, they calculate what decompression theories and experience tell us usually happens in similar situations. Both technical divers and recreational divers have undeserved hits—and misses.

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HOW TO MAKE A DEEP STOP

NAUI, PADI AND THE DIVE COMPUTER MANUFACTURERS who have adopted RGBM algorithms all have slightly different ideas on the best way for recreational divers to make a deep safety stop.

> NAUI: Recommends a one-minute deep stop at half your maximum depth on all dives deeper than 40 feet. Once the stop is complete, you should ascend slowly (no faster than 30 feet per minute) to the traditional safety stop at 15 feet. NAUI's protocol allows you to subtract the deep stop time from the 15-foot stop, but there's nothing wrong with staying longer at the shallow stop, says O'Leary.

If you follow NAUI's recommendation on a dive to 90 feet, you'll stop your ascent at 45 feet and hold there for one minute before continuing to a traditional safety stop at 15 feet for two minutes. That means you would surface at the same time as another diver who started with you and made only the traditional three-minute stop at 15 feet.

O'Leary stresses that the deep stop is a recommendation and not mandatory if conditions aren't right. "Make an intelligent decision," says O'Leary. "If there's current at 40 feet and you're drifting away from your vessel, this may not be the time."

> PADI: Sees less value in deep stops and dual-phase models like RGBM for recreational divers. Karl Shreeves, vice president for technical development at PADI's Diving Science and Technology (DSAT), says, "Deep stop models offer a lot of promise for decompression stop diving, but when we talk about no-stop diving, it really doesn't seem to have much to contribute."

"If somebody within the no-stop envelope wants to do a deep stop around 12 meters [approximately 40 feet], it probably won't hurt anything, but we haven't seen anything empirical that suggests a huge or significant safety benefit," Shreeves says. If you decide to make a deep safety stop, he suggests a simple, math-free rule of thumb: 40 feet for three minutes.

> COMPUTER MANUFACTURERS: **Mares** and **Dacor** dive computers incorporating a new "Mares-Wienke RGBM" algorithm sound an alarm for a deep stop at half your maximum pressure change, but only when less than three minutes of no-decompression time remains. They suggest a one-minute stop, followed by the full three minutes at 15 feet for an increase in total dive time of one minute.

All the features of new RGBM algorithms for **Suunto** and **Zeagle** computers were not completed by press time, but reportedly both will signal for the new deep safety stop. **Zeagle** computers will allow you to custom-set the depth of the alarm and turn it on or off.

And what if your present dive computer has a Haldane-type algorithm? Will it penalize you for stopping deep? Probably not. Assuming you ascend normally before and after the stop, your computer will probably average the stop with the ascents and credit you with a slower ascent rate.

Continued from p. 84

decompression "engineers," they use algorithms to keep traffic density below predefined saturation levels, and they do it for the same purpose—faster transport results in less pain. It's sometimes difficult for the commuter to accept that by waiting a minute on the ramp—the motoring equivalent of a deep stop—he will get home quicker, but those who have experienced it know it to be true.

HOW MUCH SAFER IS IT?

DEEP STOPS were developed to handle the high gas loads of tech divers. Given the conservative nature of recreational profiles, there is some question as to whether deep safety stops will appreciably improve safety for no-decompression divers. To date, there is no definitive proof that bubble theory and deep safety stops will help recreational divers, and there probably never will be. The number of DCS cases is already so low—estimated at somewhere between one and three cases per 10,000 dives—that "the data is lost in the noise," Wienke says.

"Is it safer? Time will tell," says O'Leary. "We believe in it so much that we say 'absolutely.'"

And here's another statistic to think about: According to the most recent DAN injury report, 79 percent of decompression sickness "hits" were the more serious type II variety involving the central nervous system and often leaving permanent injury. If paralysis is on the table, every safety margin helps. "I'm quite convinced," says Vann, "that bubble algorithms will overall give us safer dives and make a fairly safe situation even safer." **SD**

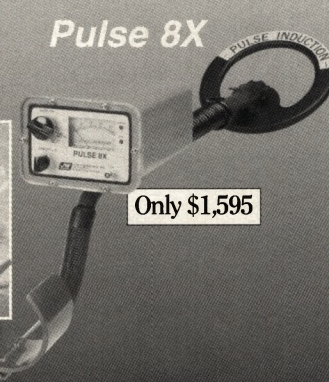


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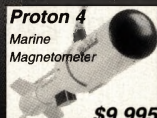


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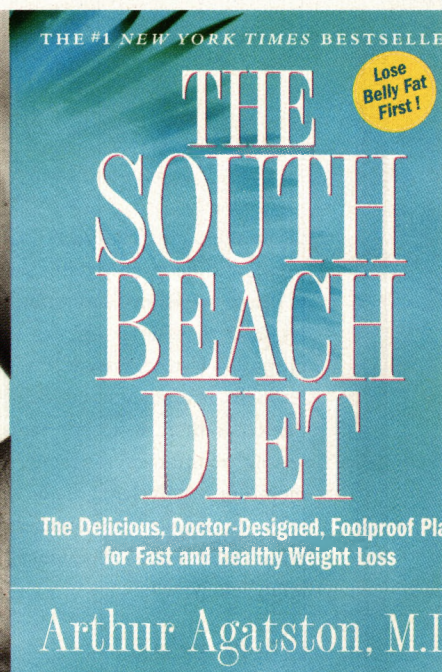


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Sniff your tank:
Bad air may have an odor.

What's in Your Tank?

How to test the air in your cylinder. BY JOHN FRANCIS

A LOT OF US DIVE IN FAR-OFF PLACES where scuba tanks and compressors may not receive first-world maintenance. And for that matter, a lot of us buy first-world air fills without really knowing what is going into that tank. Inspectors have found paper towels, cotton-tipped swabs, pencils, rats, mice, bugs, name tags, marijuana and cocaine in scuba tanks, according to Bill High of Professional Scuba Inspectors.

While recreational drugs are not likely to find their way into your tank at even the heartiest partying resort, bad air of one kind or another is not impossible. The most likely contaminants come from a corroding tank, a poorly maintained compressor or intake air that was polluted in the first place.

All these are very rare, thankfully, because you can't be certain of pure air without some expensive test equipment. You can, however, perform a few simple tests that might eliminate the worst offenders.

(SNIFF IT)

Bad air will not necessarily have an odor. Carbon monoxide, for example, is odorless. But an oily smell or a diesel smell indicates other hydrocarbons. Is the compressor's air intake too near a parking lot? Is the wind carrying the boat's exhaust the wrong way? A chemical or damp smell indicates aluminum hydroxide, an indication water has entered an aluminum tank.

Be careful how you sniff the tank, though, as the high pressure jet from a full tank can puncture your skin. First, barely crack the valve open to get some airflow. Then put your nose near it.

(EYEBALL IT)

Check the filter in your reg's first stage now and then—especially after you've used air from an unfamiliar source. High cautions that contaminating particles don't always leave the tank to show up on the filter, but if you see white powder, that's probably aluminum oxide—dry oxidation inside an aluminum tank. Black powder is probably carbon from a compressor filter that has failed. Rust from a steel tank most often looks red or brown, although it can be black too.

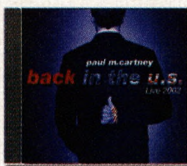
But who cares what the stuff is on your filter? If you smell anything, or see anything on it, don't use the air.

SD

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Jack Johnson
Brushfire Fairytales



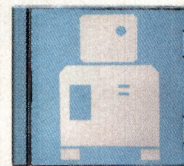
Paul McCartney
Back in the U.S.



Beth Orton
Day Breaker



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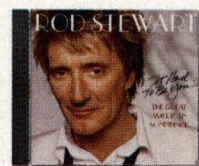
Josh Groban
Josh Groban



Blind Boys of Alabama
Higher Ground



Fleetwood Mac
Say You Will



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Bonnie Raitt
Silver Lining



Paul McCartney
Driving Rain



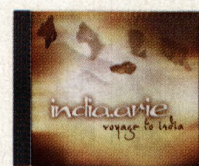
Dar Williams
The Beauty of the Rain



John Mayer
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Stronger Legs for Better Finning

These simple moves will have you slicing effortlessly through the water. **BY SELENE YEAGER**

HAVE A SEAT.

That is the position the average American spends 7.7 hours a day in. Now stretch out and imagine yourself finning through the warm waters of the Caribbean. Small wonder so many divers cramp and fatigue after just a few short dives. Everyday life doesn't even begin to condition our leg muscles for the demands of diving. Fact is, neither do most physical activities, which is why even fairly athletic people are surprised by tired legs and sore glutes after a couple of dives in the morning.

"Finning takes more strength than most people realize," says sports fitness and nutrition expert Liz Applegate, Ph.D. "People mistakenly think the fins do all the work because they make you faster. But your leg muscles are performing double duty. Fins take up a larger surface area than your bare feet, so you need to recruit more leg muscles to push against the resistance of the water. Finning uses the front and back of your legs pretty equally, so you also need balanced leg strength, which even active people often lack. Without proper preparation, you can fatigue pretty quickly, especially if you're working against currents," she says.

The key to faster, tireless finning is strengthening your quads, hamstrings, calves and glutes evenly, says Applegate. It also helps to have strong core—or ab,

oblique and back—muscles, because they provide a stable platform for your working legs to propel.

Applegate recommends the following workout to strengthen your flutter-kicking muscles. "Because these exercises are done on a large inflated exercise ball (available for about \$20 in most sporting-goods stores), they also help strengthen those key core muscles," says Applegate, also author of *Bounce Your Body Beautiful* (Prima, 2003), a woman's shape-up program that also builds great scuba strength. Do two sets of 10 to 15 repetitions of each exercise. After a month, you'll be able to produce real finning power.

HAMSTRING CURL

This is one of the most effective exercises you can do to strengthen your hamstrings, which assist your legs during the upstroke of each kick. It also works your abs and glutes.

Here's how: Lie on your back on the floor. Extend your legs and place your heels on the top of the ball. Rest your arms on the floor by your sides, palms

The hamstring curl can give you the strength you need to keep up with the whale sharks.

down. Press your heels into the ball and lift your butt off the floor until your body forms a straight line from your feet to your shoulders. Only your head and shoulders should be resting on the mat.

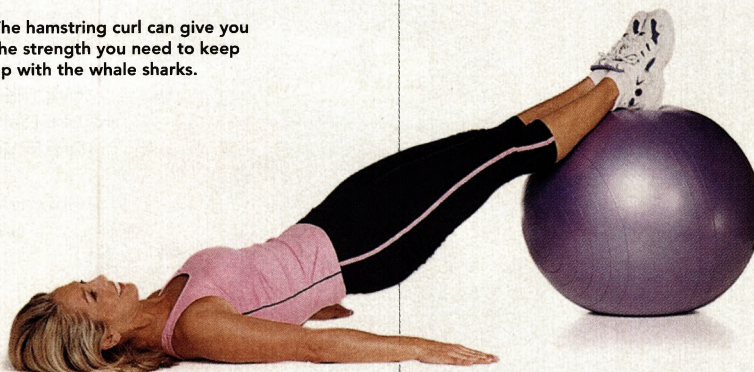
Exhale and bend your knees, using your heels to pull the ball toward your butt, so your feet end up flat on the ball. Inhale and then extend your legs back to the starting position. Make the move more difficult by positioning your arms straight over your head.

ONE-LEG DROP SQUAT

This exercise strengthens calves, which, when weak, can be prone to cramping. It also strengthens glutes and helps develop equal strength in both legs for efficient finning.

Here's how: Lie on the ball in a bridge position with your upper back against the ball, your knees bent and your feet flat on the floor. Extend your arms straight out in front of you at chest level. Lift your right foot off the floor, extending it straight out from your hips.

Inhale and bend your left knee, squatting down and sinking your butt toward the floor. Allow the ball to roll as your back moves downward. Exhale and press back up to the starting position with your left leg. Complete a full set; then switch legs. If balance is a problem, try this exercise with two feet first to get accustomed to the movement.



SCISSORS LIFT

This seemingly simple move strengthens your inner and outer thighs, butt, obliques and abs, all of which support your body as you kick.

Here's how: Lie on your back, hugging the ball between your lower legs. Roll onto your left side and prop up your

head with your left palm. Rest your right hand on the mat in front of your abdomen. Angle your right hip forward, so your right foot is about six inches in front of your left. Your legs will look like open scissors.

Exhale and lift the ball directly toward the ceiling. Pause, inhale and

lower back to the starting position. Complete a set; then switch sides.

CALF RAISES

Strong calves will help you perform every activity better, especially finning, which actively recruits these lower leg muscles. Calf raises can help prevent cramps during and after diving.

Here's how: Stand a few feet away from a wall with the exercise ball between your abdomen and the wall. Lean forward into the ball so that your body forms a straight, angled line from your heels to your head.

Exhale and rise up onto the balls of your feet. Pause, inhale and lower yourself back to the starting position. **SD**

WATER WORK

Strength training will definitely give you a stronger flutter kick; but for real finning fitness, it helps to hit the pool for some actual in-water work, says Liz Applegate. She recommends performing the following drills in a 25-yard lap pool.

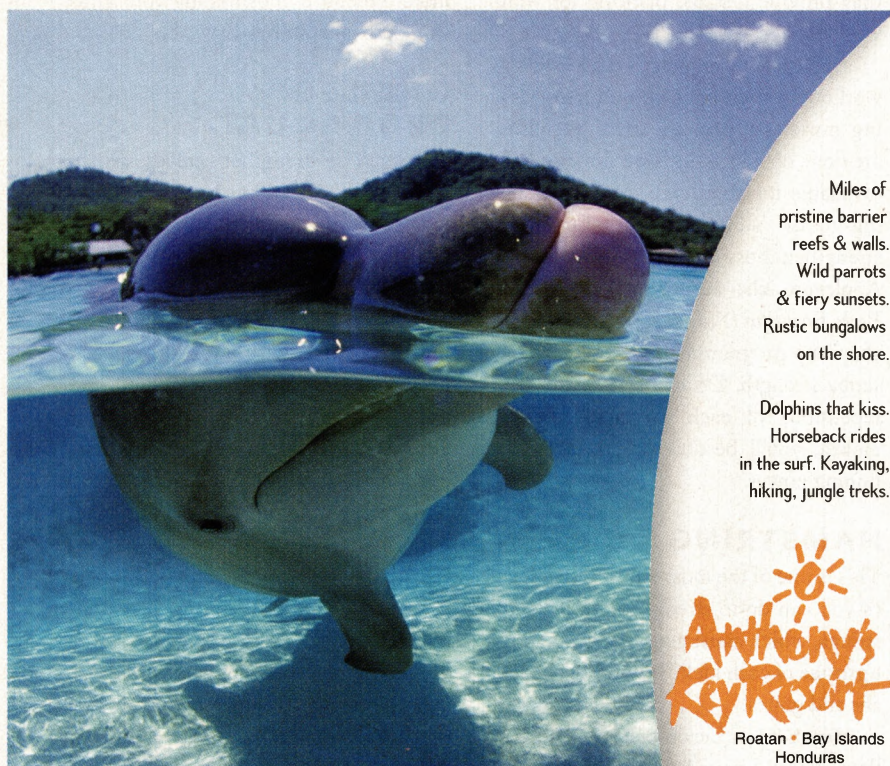
Length 1: Place your arms down at your sides, and with your feet and legs together, undulate both legs, or "dolphin kick," to the other side of the pool. (You can stroke with one arm as needed to keep your head above water.)

Length 2: Flip over on your back, extend both arms and cross your hands overhead. Then return across the pool, dolphin kicking as described above.

Length 3: Remaining on your back, arms extended overhead, flutter kick back across the pool.

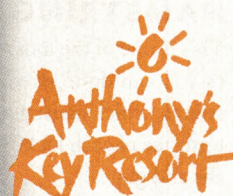
Length 4: Flip onto your stomach. Put your arms back down at your sides and flutter kick back to the starting point.

Rest 15 seconds. Repeat the series. Work your way up to 5 sets.



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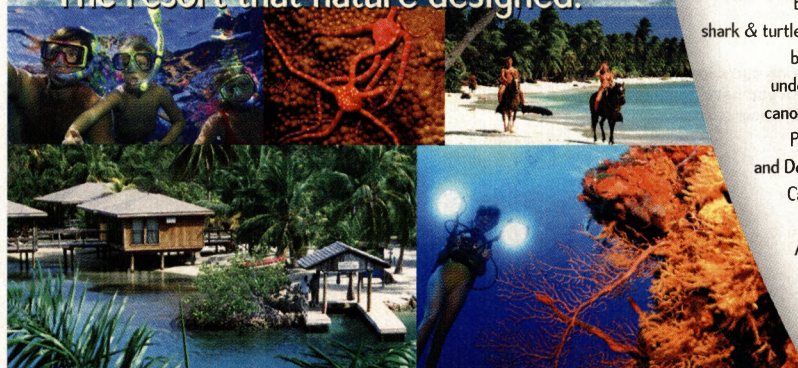


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Digital shooters are learning that TTL technology is not required for great underwater photos.



Strobe Use in the Digital Era

The siren of digital photography tempts underwater shooters who are married to TTL. Is there hope for this relationship? **TEXT AND PHOTOGRAPHY BY STEPHEN FRINK**

ONE OF THE FIRST LESSONS underwater photographers learn is that we need artificial light to restore the colors that are lost at depth. Without a strobe, colors are a muted and monochromatic blue-gray at

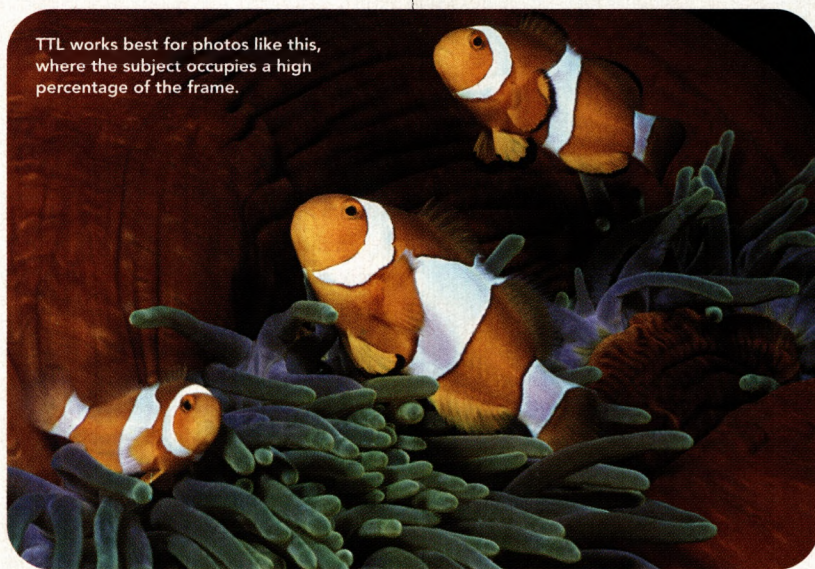
depths greater than 15 feet, no matter how clear the water, no matter how vibrant the reef.

In the old, old, old days, there was no such thing as automatic flash exposure, and in order to choose the right f-stop for their strobe, photographers had to calculate the distance between the strobe and the subject. A combination of strobe-to-subject distance, strobe power, ISO speed and subject reflectivity determined the f-stop.

In the old, old days, external sensors were used to measure the amount of light that bounced back to the subject, so you could quench the strobe power, if necessary. You typically would match the f-stop on the camera to an f-stop option on the sensor, and, theoretically, you'd get the right light output. But because the sensor did not actually see the same angle of view or specific subject that was seen by the lens, this was crude at best. The next iteration of strobe automation changed all that.

This brings us to the merely old days, the days ruled by the Nikonos V and SB-103 strobe. For the first time, the light from the strobe was reflected back through the lens to a sensor that told the strobe when to quench. The cameras and strobes were now sophisticated enough to read the film's sensitivity to light (ISO) and determine how much light was required by the strobe-to-subject distance and subject reflectivity. Because the sensor was located back by the film plane, it worked quite well for most subjects.

Especially with the more sophisticated electronics of housed SLR cameras and the Nikonos RS, through-the-lens (TTL) technology became extremely reliable for fish and macro shots. It became an indispensable tool for a new



TTL works best for photos like this, where the subject occupies a high percentage of the frame.

generation of shooters. TTL wasn't great for wide-angle, and it often failed when the subject was too small to reflect much light back to the sensor, but in a lot of situations it was a technology that increased the percentage of keepers. No wonder many shooters were disappointed when they discovered the temptress of digital technology required them to spurn their old love, TTL.

The new reality is that CCD and CMOS sensors do not reflect light the same way that film does, and so the strobes that were calibrated to analog media will not work for digital. There are exceptions, such as the Fuji S2, which is compatible with conventional TTL strobes. Other manufacturers, like Nikon with its D100 and D1X, use D-TTL, which utilizes as many as 15 virtually indiscernible preflashes to gauge exposure prior to the primary flash. Their dedicated topside flashes can handle this task, but none of the submersible strobes presently on the market can.

Not only does a normal TTL strobe not function accurately with digital cameras, but most digital cameras know something is amiss and typically won't trip the shutter at all. This fact forced

manufacturers to create either new dedicated digital sync cords or to wire their sync ports or hot shoes differently, depending on whether a manual strobe or D-TTL strobe was to be used.

Clearly, things are now getting a bit complicated. The newest image capture technology forces shooters to accept the oldest manual strobe techniques. There's a very significant twist, however, because with digital you can see the results immediately and make corrections as needed. Here's an overview of the various strobe options for digital cameras today:

INTERNAL STROBE ONLY

This is the easy point-and-shoot solution used by many of the inexpensive clear plastic and Lexan housings for consumer digital cameras. The camera's built-in strobe, which is essentially TTL, provides the illumination. So long as you're close to the subject and the water is clear, this works fine for digital snapshots. The problem occurs when there is too much particulate matter in the water. Having the flash so close to the lens inevitably creates backscatter.

Also, mounting an external optical accessory such as a supplementary wide-angle lens might block the flash.

INTERNAL AND EXTERNAL

There are a few solutions that use the camera's internal flash, block it so it can't create backscatter, yet still use it to trigger an external flash. Sea & Sea uses an internal deflector in both its DX3000 housing and AquaPix DX-3100 amphibious camera, which bounces the strobe to a fiber-optic receptacle, which, in turn, fires an external strobe. Pioneer Research uses a similar concept in its ReefMaster cameras. Here, an external deflector bounces light to a dedicated slave strobe, firing the submersible strobe in sync. In both cases, these are manual strobe exposures, but by changing the power setting on the strobe or adjusting the strobe-to-subject distance, considerable control is possible. (Note, however, that not just any strobe can be used like this. Most traditional slave strobes fire when they detect any flash, even a preflash, and most can't recycle in time to fire again when the main flash goes off. A "digital" flash may be required.)

THE IKELITE SOLUTIONS

Ikelite has devoted plenty of creative thought to the issue of how to bring strobe light to digital cameras. The company offers housings for a wide variety of consumer point-and-shoots and digital SLRs, and also manufactures a line of popular submersible strobes. Overcoming digital strobe barriers has become its mission. Ikelite engineer Roger Carlson suggests several different options for digital lighting:

➤ A digital sync cord that allows Ikelite conventional strobes such as the Sub-Strobe 200 to be fired manually with Nikon and Canon D-SLRs.

> A manual controller with a DS sensor that provides preflash emulation with Ikelite's DS-125 and DS-50 strobes, thereby ensuring TTL in sync with the camera's onboard flash.

> A manual E-V controller that can be hardwired inline with Ikelite's DS strobes to provide up to 10 separate power settings for systems that require manual exposures.

Ikelite is committed to ongoing research and development. The company has already cracked the Olympus digital TTL code, and is exploring D-TTL (Nikon) and E-TTL (Canon). Someday soon it may be as easy to shoot Ikelite submersible strobes in D-TTL as it was back in the analog days.

This Sea & Sea DX3000 uses a fiber-optic cord to sync the integrated and external strobes.



HOUSED DIGITAL STROBES

Currently, the only way to get true TTL for cameras like the Nikon and Canon D-SLRs is to use their dedicated speedlights. Subal, Seacam and possibly others have specific strobe housings to accommodate these smaller topside flash units. While they do provide excellent exposure automation for fish and macro

subjects, the beam does not spread nearly enough to cover the wide-angle lens.

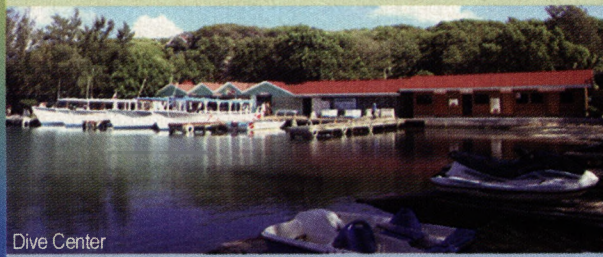
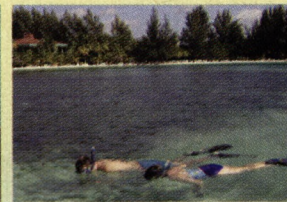
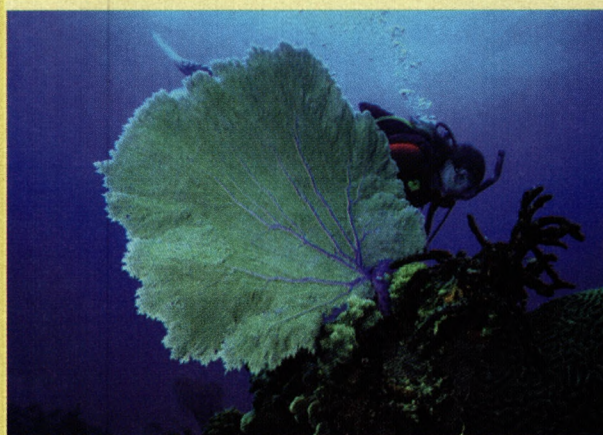
MANUAL EXTERNAL STROBE

Actually, since I began shooting in the old, old, old days, and never really switched over to TTL, shooting 100 per-

cent manual was the natural solution for me. But for others who love TTL, not having it with their digital cameras was at first intimidating. Many find, however, that the immediate image review of digital photography makes shooting manual a snap—just shoot, review, adjust and reshoot. **SD**

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How'd He Do That?

ON THE day I

shot this photo, I was assisting on a documentary film project in the Socorro Islands, 300 miles off Cabo San Lucas, Mexico. It was the end of the day, and I was the last one in the water. The light was falling, the water was turning an incredible blue and the surface was starting to calm.

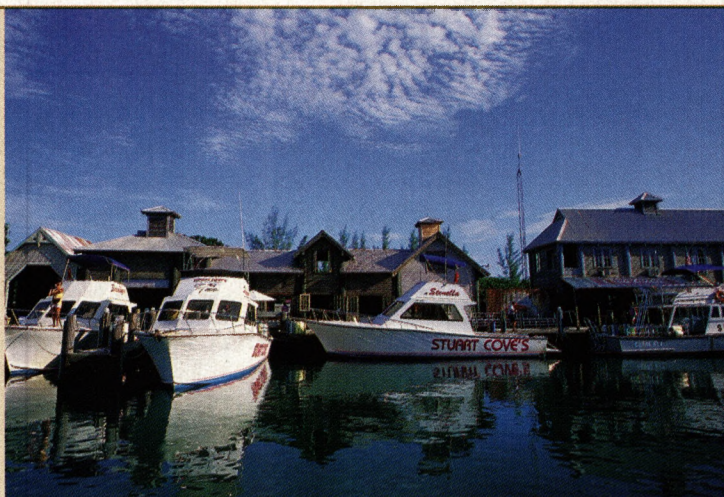
As I watched the play of light and water at the surface, this manta ray materialized out of the blue, turned and then swam back into the distance. I used my motor drive to expose my remaining film—maybe 16 images in all. The curve of the manta's wing was perhaps predictable, but the break of water in a split image is almost impossible to plan for. In the end, I got only one image where the elegance of the manta's slow turn is mirrored by the artistic splash of water across my camera's dome. —TIM CALVER

CAMERA & SETTINGS: Canon EOS 1 and 15mm lens; Watershot CE-1 housing with dome port; Fujichrome Provia 100 film.

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Wreck Central

The island of New Providence and Stuart Cove's Dive Bahamas is becoming very well-known to wreck divers in the know. With the summer sinking of the 200-foot *Ray of Hope*, there are now 16 wreck locations on the southwestern side of the island and more than 40 other named spots for recreational divers. Stuart Cove and his staff were also active in sinking two other wrecks earlier this year to form the already famed "Steel Forest," a trio of wrecks that offer great exploration opportunities to all levels of divers.



Reader Specials

In celebration of better-than-ever wreck diving, Stuart Cove's Dive Bahamas is offering a unique deal to *Rodale's Scuba Diving* readers from November 1, 2003, to February 15, 2004 (holidays and blackout dates excluded). Here's the deal: Buy one Wreck Diver Course (\$115 for the training fee) and have a buddy join you for free! The only prerequisites are that you both have Advanced Open Water or higher certification and that you book your accommodations through Stuart Cove's (that's easy, thanks to a nice variety of choices).

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The resort is located where guests can easily dive all around Turneffe Atoll, as well as Lighthouse Reef and its famed Blue Hole, Half Moon Wall and Long Caye. Three dives per day (plus a weekly night dive) are the norm, as are small groups on their Pro 48 custom dive boat (usually just four to eight divers). The resort's popular instructors and divemasters emphasize personal service and lots of flexibility.

With more than 60 dive sites nearby and typically ideal conditions below and above the surface, it's hard to beat the diving. But surface intervals are also something special at Turneffe Flats, thanks to modern air-conditioned rooms right on the beach, excellent dining, a bustling lodge and bar, plus lots of other options (including world-class saltwater fly fishing).

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Through "1% for The Planet," Turneffe Flats commits 1% of their revenue to organizations promoting conservation and sustainability of coastal marine habitats, such as Turneffe Atoll.

For a closer look at something very special in Belize, be sure to visit the Turneffe Flat's excellent web site for package information and much more.

All I want for presents is some scuba stuff



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A Dutch Treat

Diving in the ABCs



Each of the Dutch Caribbean Islands, known as the ABC Islands, offers its own unique diving vacation both above and below the surface. While Bonaire has long been known as one of the top dive destinations in the world, Aruba and Curaçao have come into their own as diving hotspots. And thanks to their proximity, it's easy to visit and dive more than one island in a single trip.

BONAIRE

Auto license plates on Bonaire say "Divers Paradise," and it doesn't take long to realize it's not just a tourism slogan. Created through volcanic eruptions, the island is literally a steep underwater mountain, with fringe reefs awaiting right off the beach. Plus, the average boat trip is only 15 minutes, and you can reach most of the farther dive sites in less than an hour.

Well out of the hurricane belt and thus protected from reef damage, Bonaire offers some of the world's best diving year-round. With only 12 inches of average annual rainfall, the island has virtually no freshwater runoff to hinder visibility, which is typically 100 feet or more. And because the sites are

so close to shore and the water so calm, divers can hit the water day or night.

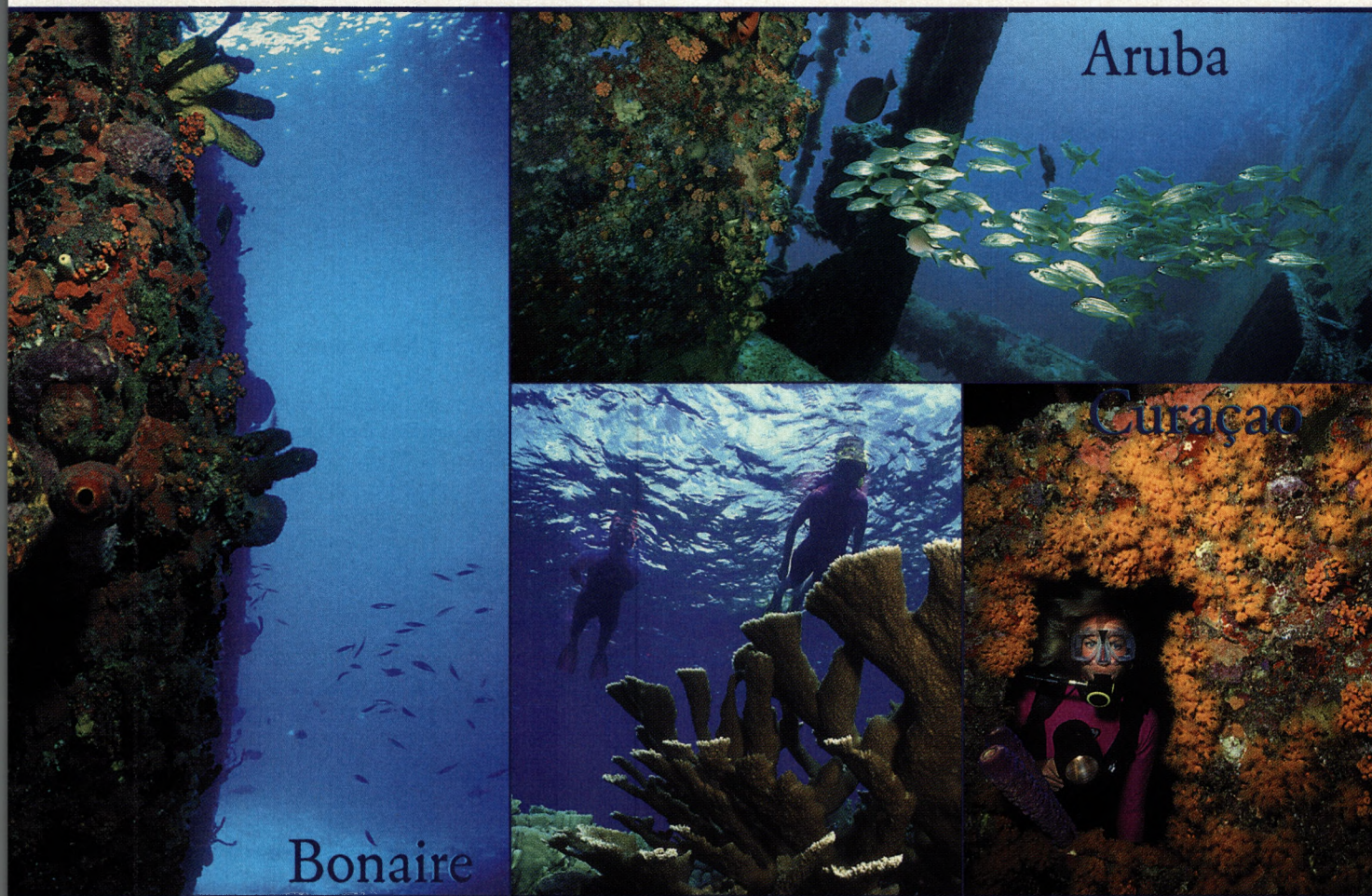
The best sites are found within the protected leeward side of the island, where the reefs have a narrow sloping terrace. **Thousand Steps** and **Nukove** are great examples of the numerous shore dives, while **Alice in Wonderland** is one of the most popular boat dives. Over off Klein Bonaire, 24 reef sites include popular dives like **Forest** and **Carl's Hill**.

The island has a history of environment- and diver-friendly policies. Way back in 1979, Bonaire designated all surrounding waters as a Marine Park and banned spearfishing and coral collecting. Later, the government instituted a system of permanent

moorings to minimize anchor damage. A reef preservation program offers visiting divers free advanced and photo buoyancy workshops and the local dive operations are extremely active in keeping the reefs pristine.

The accidental sinking in August of the 60-foot historic vessel, *Our Confidence*, inadvertently created a new site for Bonaire divers to explore. Fish have already taken up residence in this wreck—located just 150 feet west of Harbour Village Beach Club—and the mast is just 22 feet below the surface.

Bonaire also continues to host and expand the popular Bonaire Dive Festival each June. (Rodaie's *Scuba Diving* is one of the sponsors.) Like earlier versions, the 2004 Dive Festival (June 19-26) will offer great



Bonaire

Aruba

Curaçao

packages at participating resorts, lots of diving, seminars, underwater photography workshops, evening events and parties, and many other possibilities. Previous Bonaire Dive Festival presenters have included Stephen Frink, Sylvia Earle, Stan Waterman, and Bonaire's own Dee Scarr. Wyland and Ned DeLoach have already been confirmed for 2004!

ARUBA

Long known for great beaches, resorts, and casinos, Aruba continues to attract more divers annually, thanks to excellent conditions and a number of fascinating wrecks. In fact, *Rodale's Scuba Diving* readers rate Aruba as one of the top wreck diving destinations in the Caribbean.

The island has more than 20 dive sites and at least 10 shipwrecks to explore. Most dives are in the 30- to 60-foot range, making for long bottom times and enjoyable dives for all skill and certification levels.

Aruba is home to the largest wreck in the

Caribbean—the *Antilla*—which is a 400-foot German freighter that offers divers many pockets to explore. Other popular wrecks include the *Pedernales*, *Tugboat*, and the *Jane Sea*. Advanced divers love the *California*, known as the only ship to hear and not respond to the sinking *Titanic*. But reef diving in Aruba is also quite good. **Puerto Chiquito** and **Malmok Reef** are among the favorite reef dives.

CURAÇAO

The island of Curaçao continues to grow in popularity with dive travelers, thanks to great diving conditions and sites, popular dive operators and diver-friendly resorts and an ever-expanding list of things to see and do above and below the surface.

With 68 identified dive sites (and many close to shore), Curaçao offers breathtaking coral reefs, steep walls, shallow wrecks, and typically excellent conditions. **Mushroom Forest** is undoubtedly one of the most popular reef dives, thanks to the large numbers

of star coral that form forests of mushrooms on the reef. Divers can return often to this site for vastly different dive experiences each time. At **Porto Marie**, two parallel reefs create a valley that's alive with marine life, including some sightings of cornet fish, nurse sharks, angelfish and large groupers. Of course, there are lots of other great sites, including *Tugboat* and *Superior Producer*, where lots of fish take advantage of large wreck profiles.

In addition, Curaçao is also a popular destination for the annual coral spawning, which typically occurs from mid-September to mid-October. Coral spawning is a natural phenomenon in which multiple coral species and other invertebrates simultaneously release a dense cloud of brilliantly colored gametes into the water as a part of their reproduction process. Both veterans and first-timers are now coming from around the world to experience this unique Curaçao diving event.

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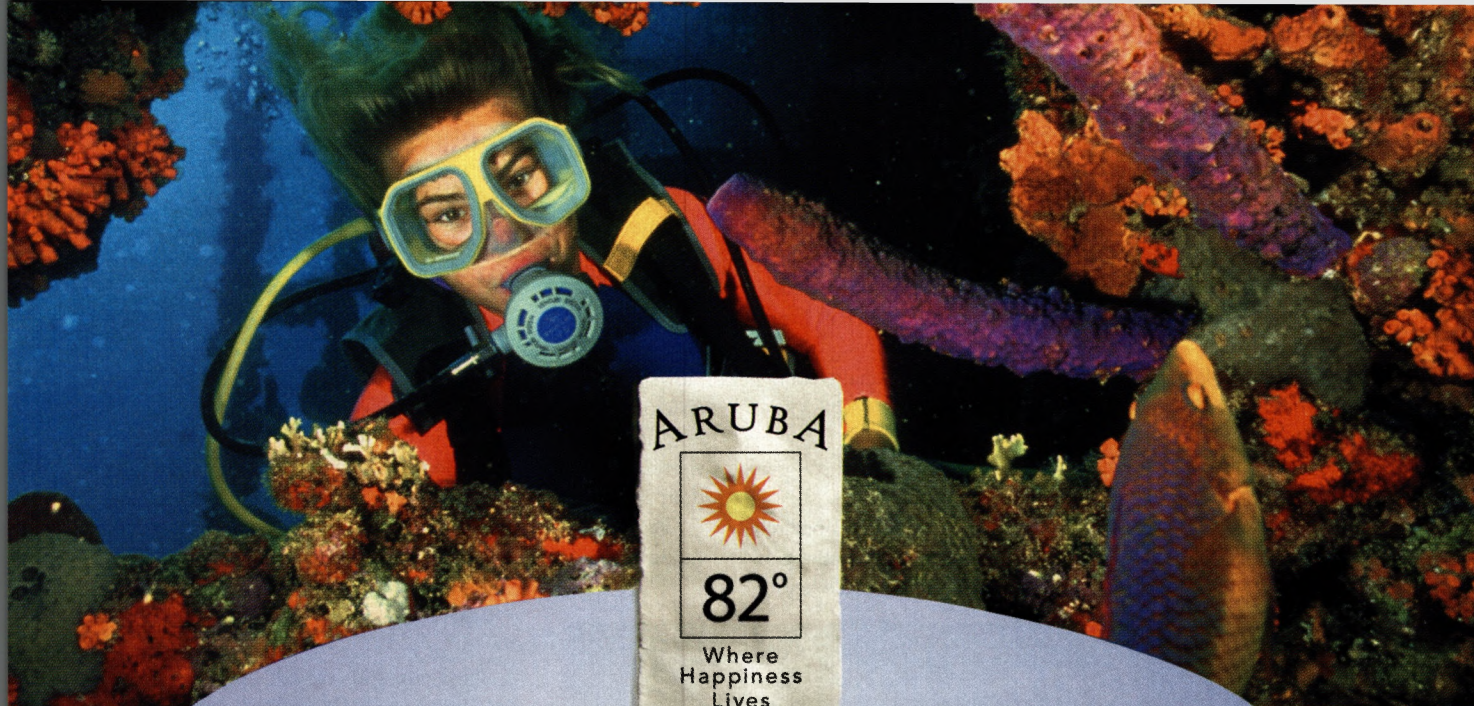
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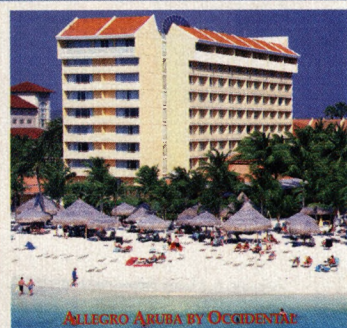
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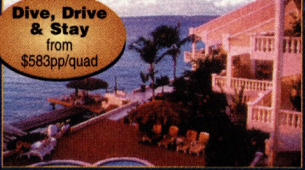
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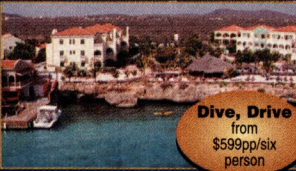
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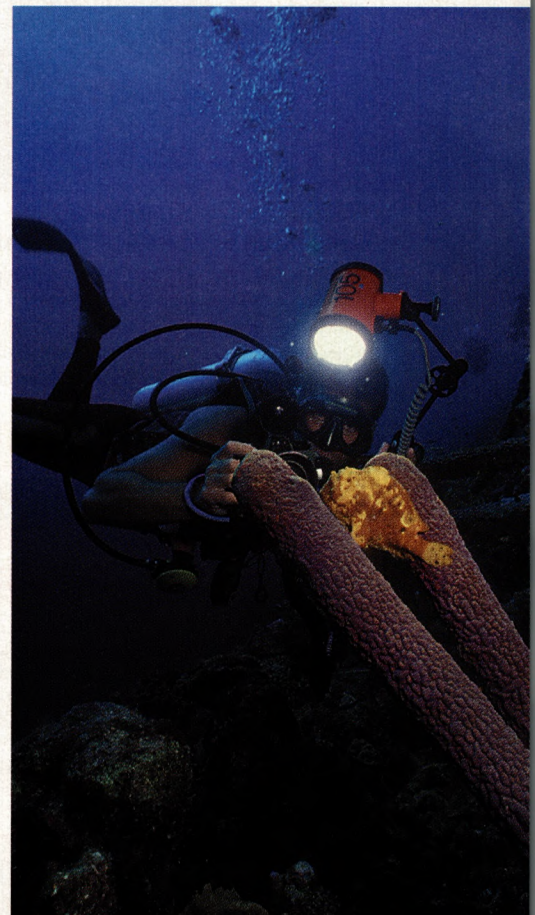
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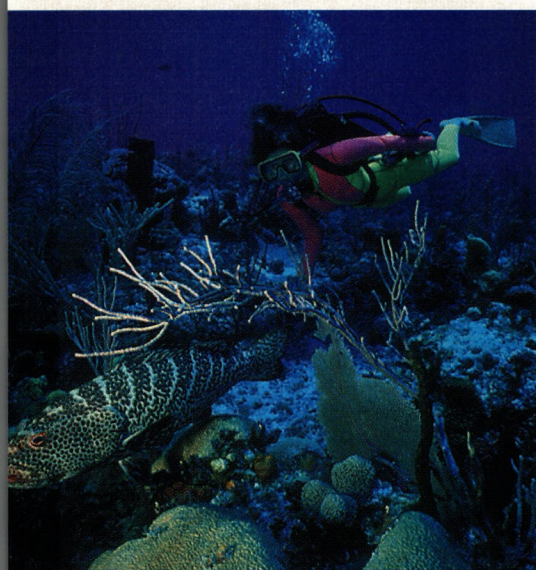
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Note: Subject to change

Depth

1



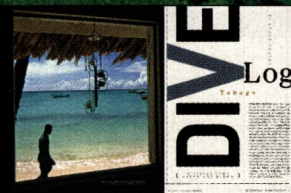
THE CRACK, BELIZE, P. 19 • Diving at Glover's Reef is done drift boat style, mainly off several small sandy cays lining the atoll's southeastern corner. Water temps range from mid-70s in winter and low to mid-80s in summer. **For More Information:** For dive operators, comprehensive travel guides and recent trip reports submitted by users on diving Belize's atolls, click on "TripFinder," located at the top of our home page, www.scubadiving.com. **Tourism:** Belize Tourism Board, www.travelbelize.org.

IZU OCEANIC PARK, JAPAN, P. 20 • Diving at Izu is year-round. In summer and early autumn, water temperatures may reach the low 80s, with visibility typically 15 to 30 feet. Izu is extremely crowded on summer and autumn weekends and Japanese holidays, so plan your trip in advance. In winter, visibility increases to 40 to 80 feet, but the weather is less reliable, and water temps drop to the mid-50s, so bring your dry suit. **Dive Opera-**

Continued on p. 108



2



DIVE LOG: TOBAGO, P. 66 • Dive Conditions: Most operators still use wooden pirogues—nimble outboard boats of local design and construction that hold a small group of divers. Divers roll off the boat at the same time and dive together as a group, particularly on drift dives. The divemaster carries a surface float, and the boat follows to pick up everyone as they surface. However, some operators are now using larger, more modern dive boats for longer runs to remote, unexplored sites. Average year-round water temperature is 78 degrees. Most divers will be fine in a 3mm wetsuit, but cold-natured folks might want a 5mm/3mm combo to keep the chill at bay. Average visibility is 60 to 80 feet, thanks to an abundance of plankton that keeps the reefs healthy. **Climate:** From

Continued on p. 108

1



Continued from p. 107

tor: Izu Oceanic Park Diving Center, (011) 85-55-751-1129. **For More Information:** www.divejapan.com.

SHOUN MARU, ROTA, P. 22 • Tranquil, tiny Rota is the southernmost island in the Northern Mariana group, between Saipan and Guam. Water temps hover in the low 80s year-round, and visibility is exceptional. Rota is the tip of a submerged mountain rising more than 36,000 feet from the floor of the Marianas Trench, the deepest waters in the world. **For More Information:** Dive Rota, www.diverota.com. **Tourism:** On the web, www.mymarianas.com or www.mariana-islands.gov.mp/tourism.htm.

2



Continued from p. 107

January through May, Tobago's air temps are the coolest and the island experiences the least amount of rain. Daytime temperatures are in the 80s and trade winds keep the island from feeling excessively hot. June to November is the rainy season. **Entry Requirements:** U.S. and Canadian residents need a passport and a return ticket. **Money Matters:** The Trinidad and Tobago dollar (TT\$) floats against other currencies and at press time was valued at TT\$6.24 to US\$1. Credit cards are accepted at hotels and dive shops, but most other transactions are in cash. **Departure Tax:** TT\$100. **Time:** Eastern Standard Time, year-round. **Electricity:** May be 110 or 220 volts, so check before you plug in any U.S. appliances. **Language:** English, but with peculiar Tobagonian quirks and phrases. **Direct Dial Code:** 868. **Just In Case:** A recompression chamber is in Roxborough. Staffed by volunteer divemasters, firefighters and nurses, it is on call 24 hours a day. **Dive Operators:** For information on Tobago dive operators, comprehensive travel guides, special dive deals and recent trip reports submitted by users, click on "TripFinder," located at the top of our home page, www.scubadiving.com. **Tourism:** Tourism and Industrial Development Company of Trinidad and Tobago, www.visittnt.com.

3



GUIDE, P. 36

BAHAMAS TRAVEL **Dive Conditions:** Winter water temperatures drop to the 70s, while summer temps peak in the high 80s. Visibility ranges from 80 to 100 feet. **Climate:** From December to May, temperatures average 60 to 75 degrees, while summer temps are in the low 80s. **Entry Requirements:** U.S. citizens need proof of citizenship such as a passport or a birth certificate and driver's license. **Money Matters:** The Bahamian dollar is equal to the U.S. dollar, and the two are used interchangeably. Credit cards and traveler's checks are accepted by most hotels and dive shops. **Departure Tax:** \$15 to \$20, depending on which island you are on. **Time:** Eastern Standard. Daylight saving time is observed from April to October. **Electricity:** 120 volts, 60 cycles. U.S. appliances are compatible. **Health Matters:** Food and desalinated water are safe. **Language:** English. **Direct Dial Code:** 242. **Just In Case:** The Bahamas Hyperbaric Centre is in Nassau. Operating hours are 9 to 6, and it is on call 24 hours a day. For emergencies, call (242) 422-2434. For more information, www.sss-network.com/bahamas. **Dive Operators:** For information on Bahamas dive operators, comprehensive travel guides, special dive deals and recent trip reports submitted by users, click on "TripFinder," located at the top of our home page, www.scubadiving.com. **Tourism:** Bahamas Ministry of Tourism, www.bahamas.com; the Bahamas Diving Association, www.bahamasdiving.com; Bahamas Out Islands Promotion Board, www.bahama-out-islands.com.



GEAR GUIDE, P. 50 • For more information on the gear featured in the Gear Guide, please visit the following web sites:

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www.diveaeris.com

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FOLLOW THE MAZE, P. 27 • To make a day out of exploring Bimini's mangrove channels, you could pack a lunch and rent a boat, but you're better off hiring local fishing guides to take you. Ask for Al Sweeting at the Sea Crest Hotel on North Bimini or Bonefish Ebby at Tiger's Den. While you're there, ask him to make his delicious conch chowder.

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ONE MINUTE TO SAFER DIVING, P. 79

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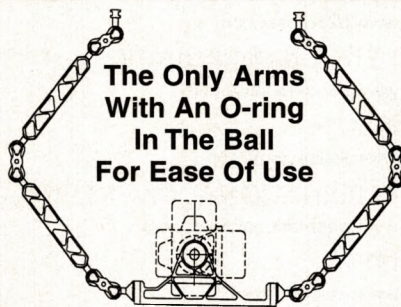
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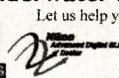
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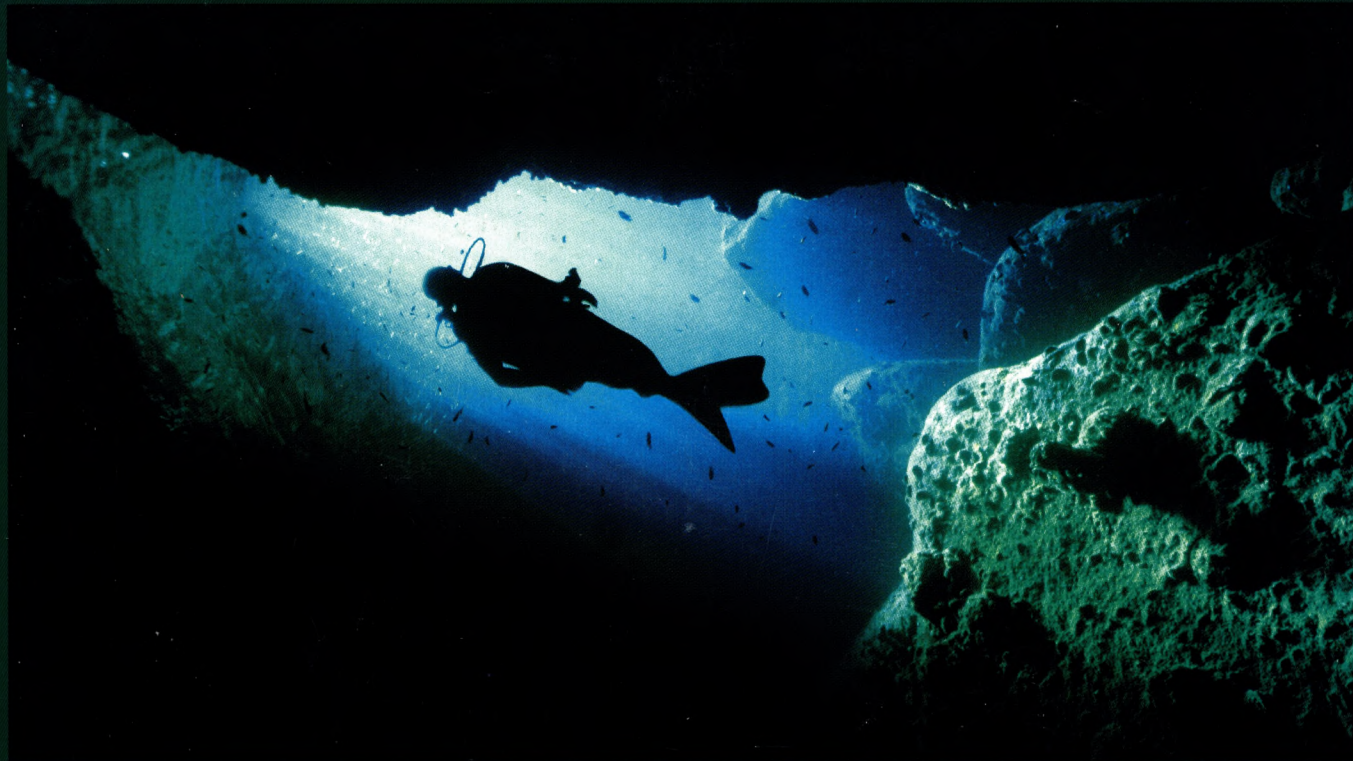
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